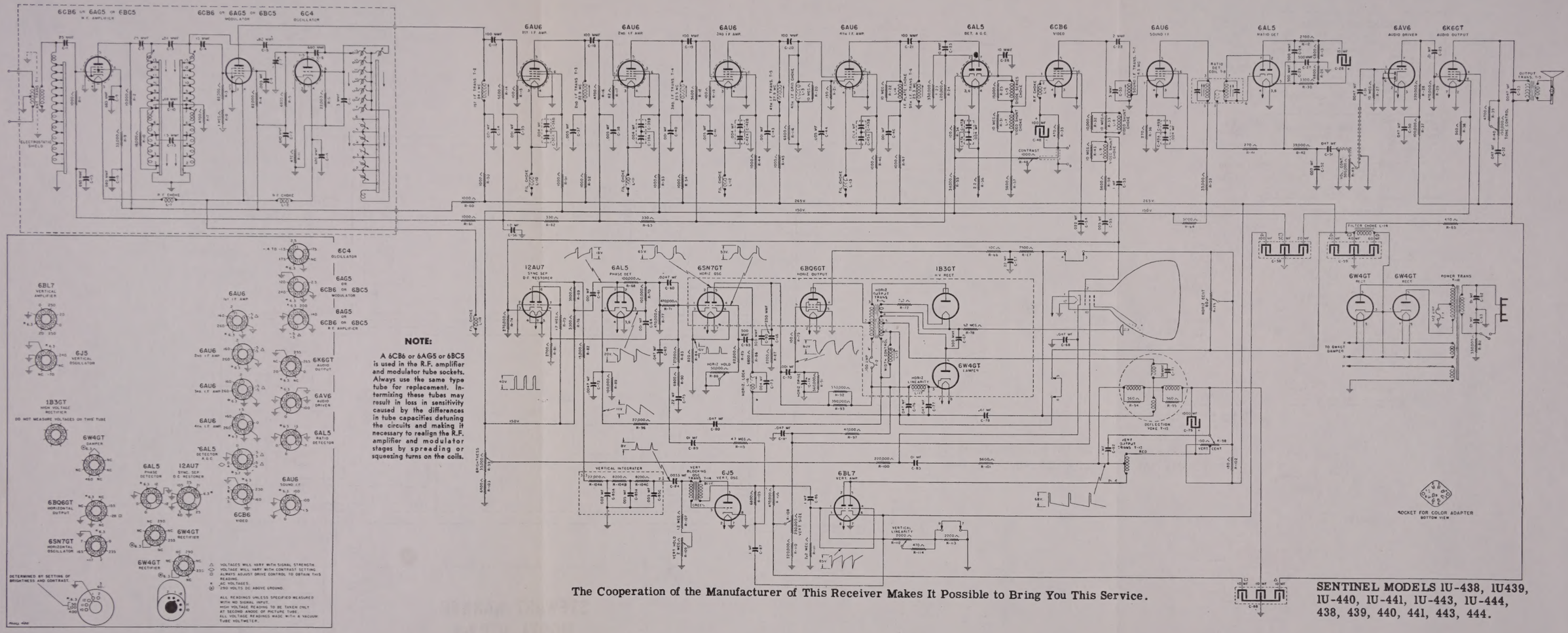
149

CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Airline	15BR-3053A, B Tel. Rec.	149-2
Arvin	5204CM, 5206CB (Ch. TE300) Tel. Rec.	149-3
Bell Sound	352	149-4
Chevrolet	986515	149-5
Hudson	225908	149-6
Masco	ME-52	149-7
Motorola	51M1U, 51M2U (Ch. HS-283)	149-8
Raytheon	C-2001A, C-2002A, C-2006A (Ch. 20AY21) Tel. Rec.	149-9
Recordio	1B10	149-10
Revere	T-100 Recorder	149-11
Sentinel	1U-438, 1U-439, 1U-440, 1U-441, 1U-443, 1U-444, 438, 439, 440, 441, 443, 444 Tel. Rec.	149-1A
Silvertone	106, 107, 141 (Ch. 132.889-2) Tel. Rec.	149-12
Starrett	17BM1, 20BM1, 27BM1, 29AM1, 30BM1, 37BB1, 37BM1, 39AM1 (Ch. 12S1, 14S1, 15S1) Tel. Rec.	149-13
Stewart-Warner	9203A Tel. Rec.	149-1A
Westinghouse	H-334T7UR (Ch. V-2136-5R)	149-14
Zenith	H664 (Ch. 6H02)	149-15



The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.

SENTINEL MODELS 1U-438, 1U439, 1U-440, 1U-441, 1U-443, 1U-444, 438, 439, 440, 441, 443, 444.

PRODUCTION CHANGES

The following tabulation furnishes complete details on changes which occurred during receiver production. The receivers incorporating these changes are identified by coding stamped on rear surface of chassis. This coding consists of one or more letters following the word SERIES, as SERIES B, SERIES AC, etc., and corresponds to similarly lettered changes shown below. Chassis incorporate only that change indicated by letter designation; i.e., chassis stamped "SERIES BE" does not include changes "A" or "C" or "D".

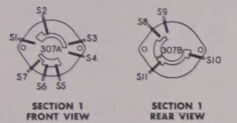
The circuit shown on this page applies to "Series A" chassis.

LETTER INCLUDED IN DESIGNATION FOLLOWING THE WORD "SERIES"	CHANGE INCORPORATED IN CHASSIS
UNCODED	INITIAL PRODUCTION
"A"	The following change was incorporated to eliminate the possibility of encountering vertical lines at the top of the raster due to a certain combination of component tolerances in the vertical output stages. 1. Condenser 245 across secondary of Vertical Output Transformer was changed from .25 MMf. to .50 MMf.

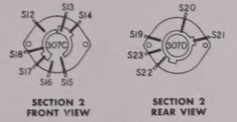
AM. OSC. COIL 508195

AM ANT. COIL 508184

BAND SWITCH 509762
(IN TV CHASSIS)

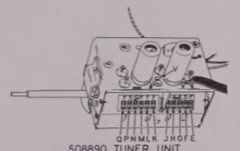


SECTION 1 FRONT VIEW — SECTION 1 REAR VIEW

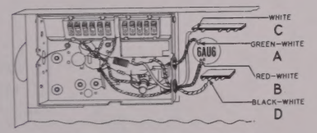


SECTION 2 FRONT VIEW — SECTION 2 REAR VIEW

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.



508890 TUNER UNIT

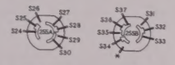


BOTTOM VIEW OF CHASSIS SHOWING CONNECTIONS TO RF TUNER UNIT

TERMINAL BF IS LOCATED ⅓ TURN FROM TERMINAL BE

FM OSC. COIL 507942

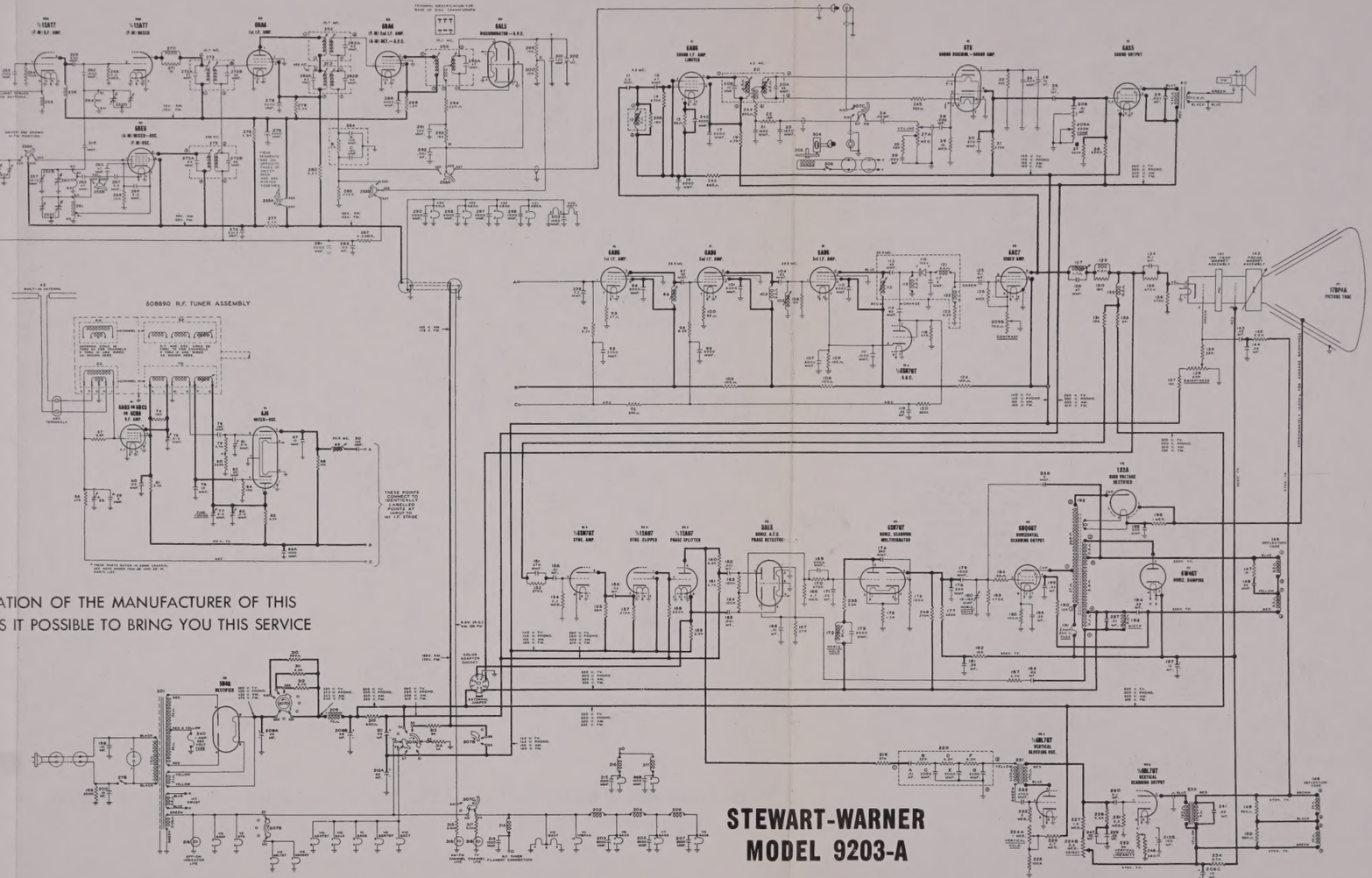
BAND SWITCH
(IN AM FM CHASSIS)
508753



SECTION 1 FRONT VIEW — SECTION 1 REAR VIEW

* Not used, may serve as wiring junction point.

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.



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STEWART-WARNER MODEL 9203-A

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SET 14 9 FOLDER 1A

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PHOTOFACT* Folder

*TRADE MARK

AIRLINE
MODEL 15BR-3053A, B

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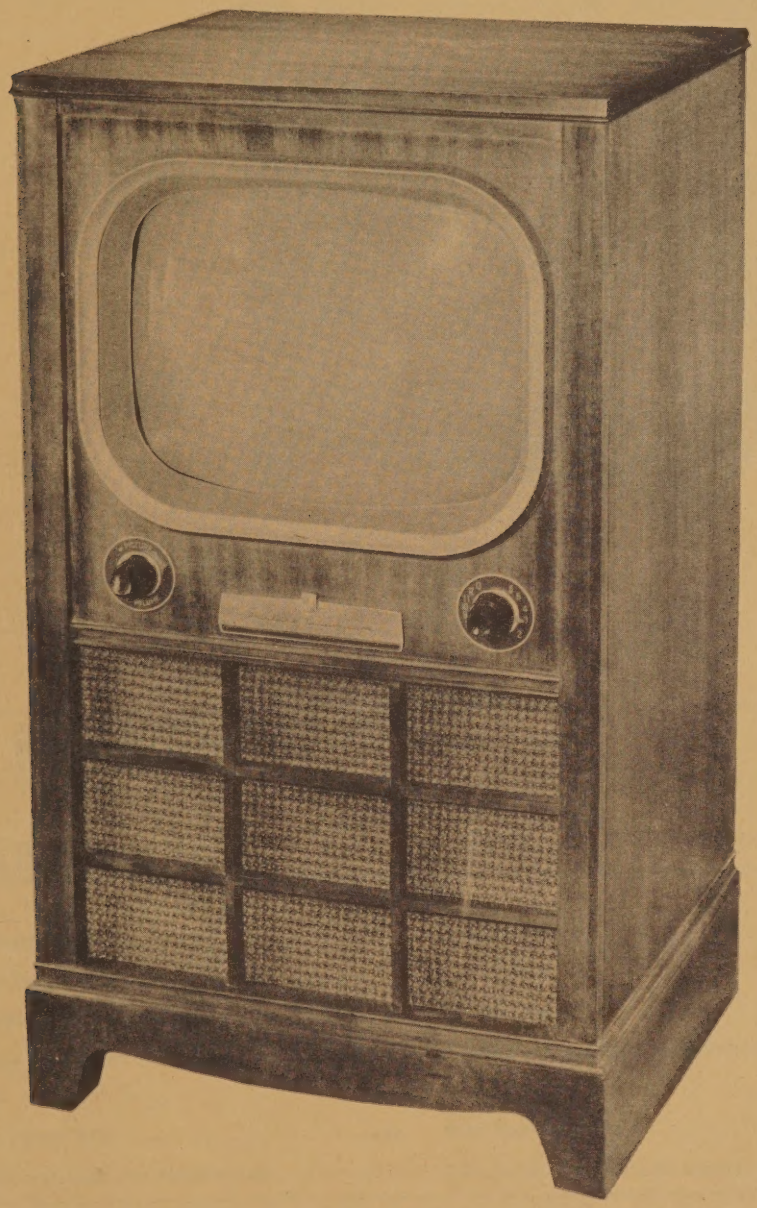

AIRLINE
MODEL 15BR-3053A, B

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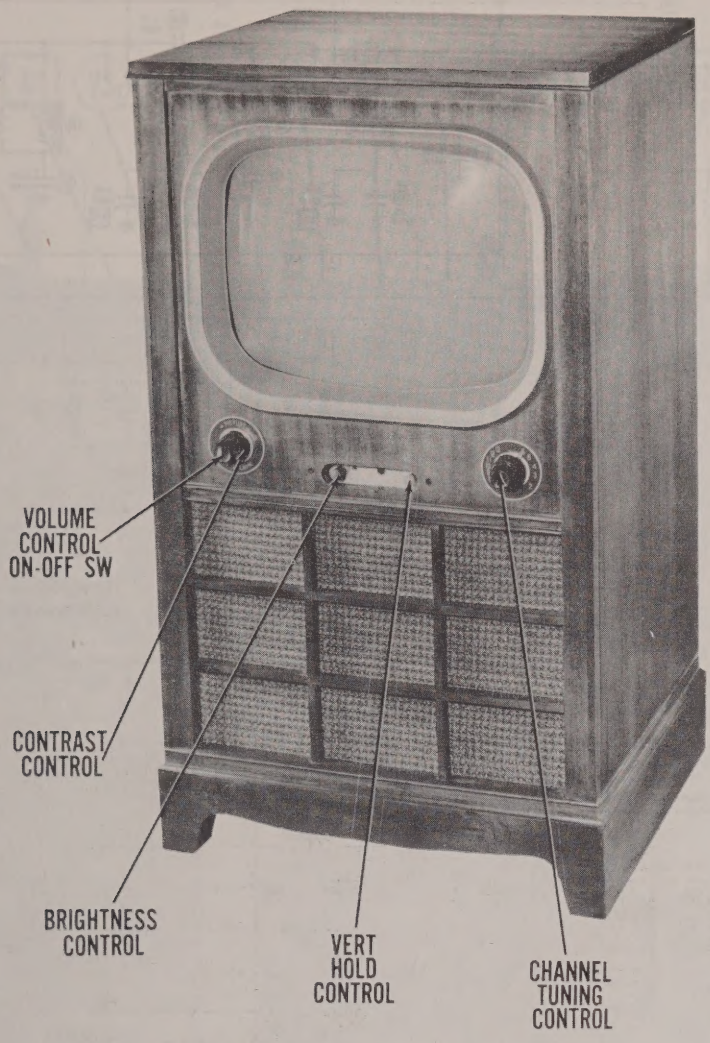
DATE 11-51 SET 149 FOLDER 2



AIRLINE
MODEL 15BR-3053A, B

AIRLINE MODEL 15BR-3053B

TRADE NAME	Airline, Models 15BR-3053A, 15BR-3053B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty-two
POWER SUPPLY	110-120 Volts AC 60Cycle — RATING 1.9Amp. at 117 Volts AC
TUNING RANGE-	CHANNELS 2 thru 13

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 11
Horizontal Sweep Circuit Adjustments 11
Parts List and Description 12, 13, 14
Photographs
Cabinet - Rear View 11
Capacitor and Alignment Identification 4, 9
Photographs (cont.)
Chassis - Top View 3
RF Tuner 10
Resistor and Inductor Identification 15, 16
Schematic 2
Tube Placement Charts 5
Voltage and Resistance Measurements 8

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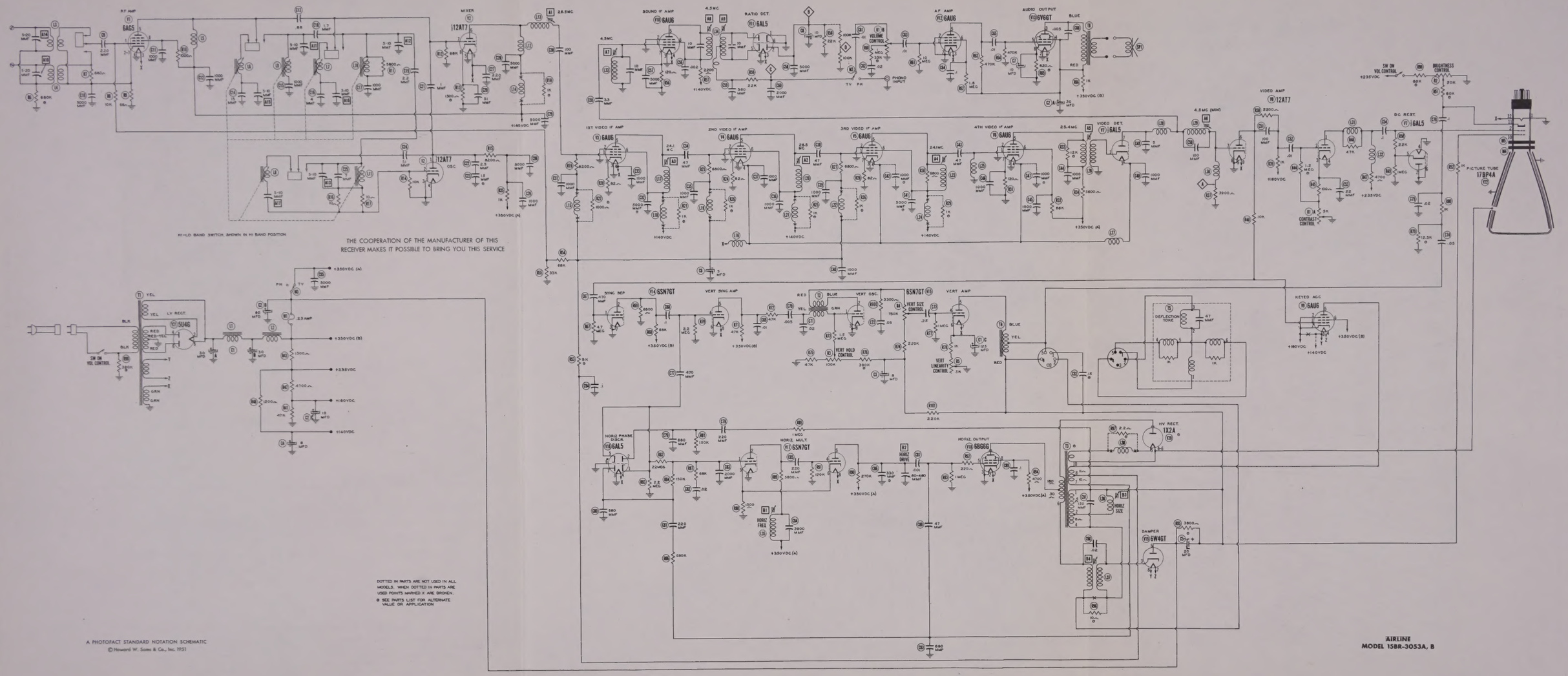
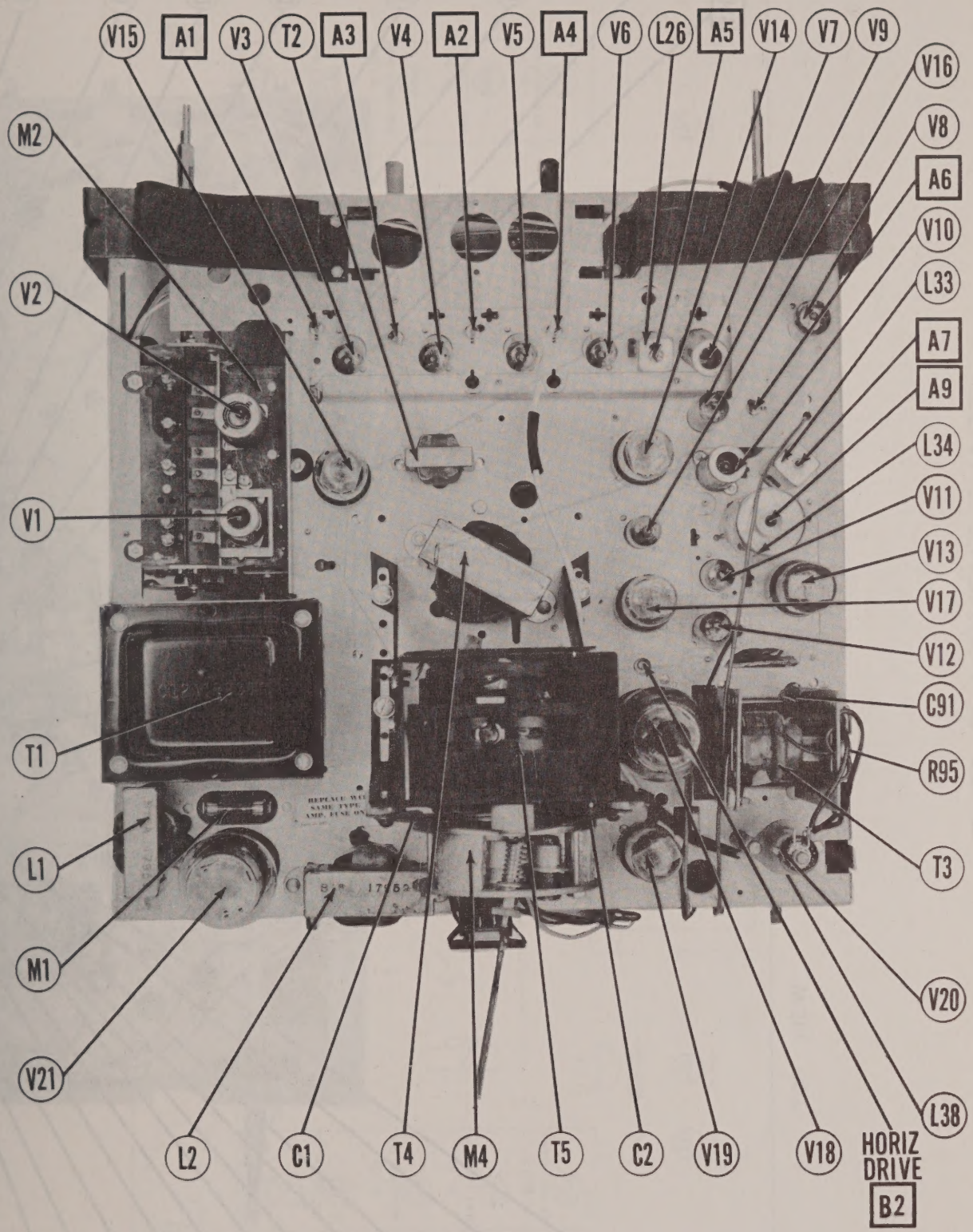
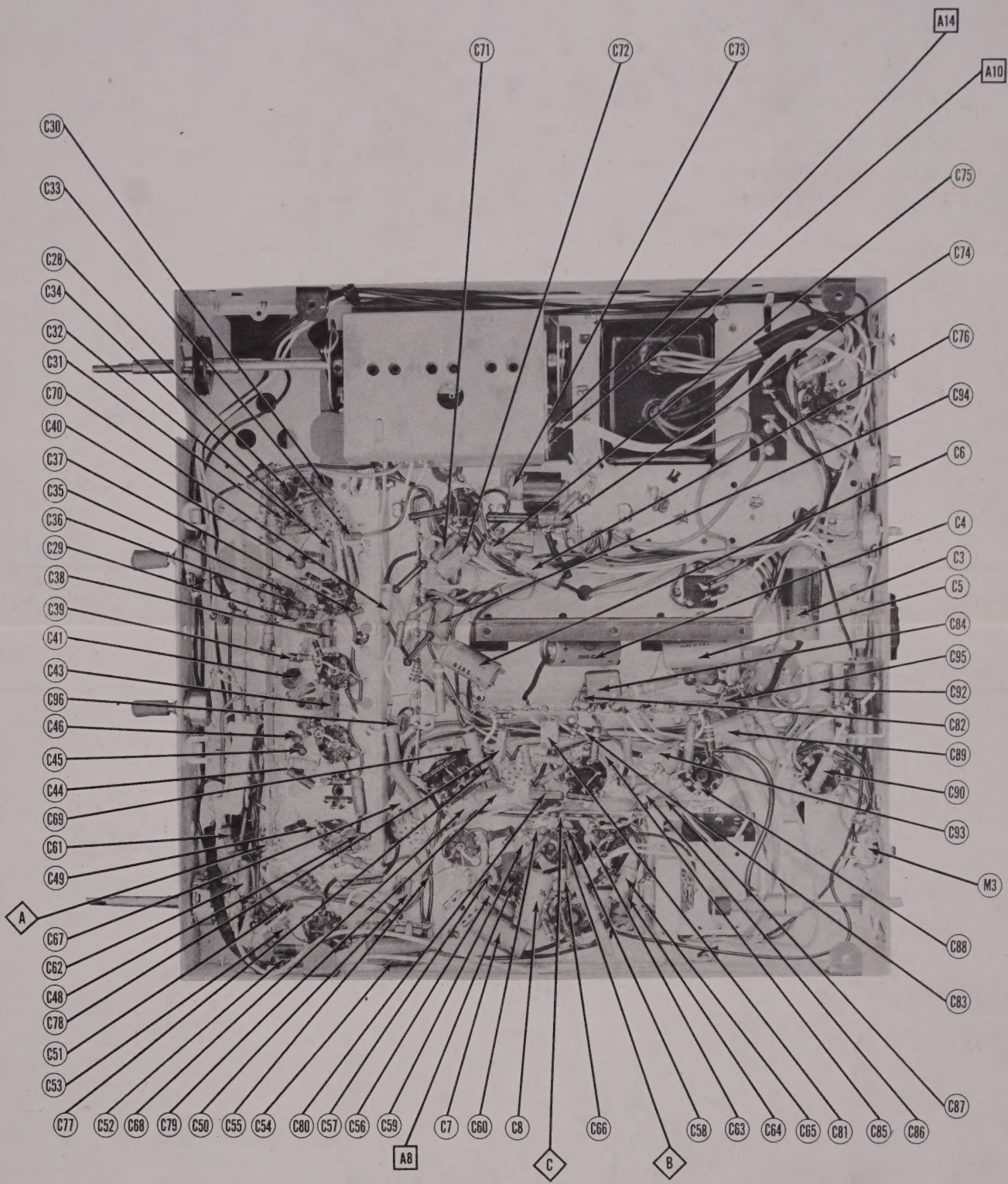


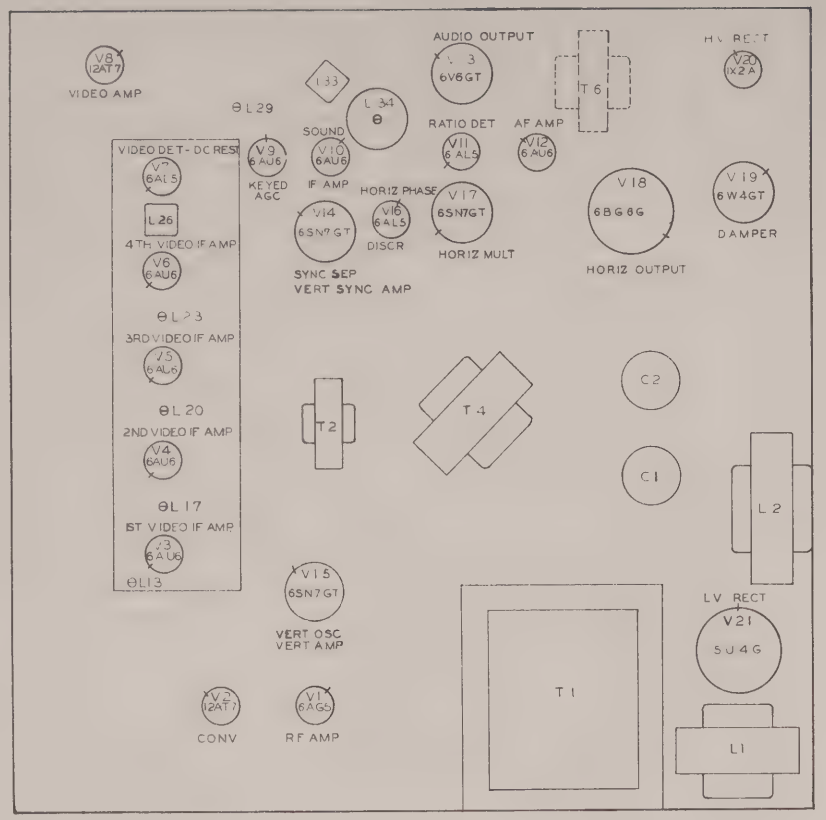
AIRLINE
MODEL 15BR-3053A, B



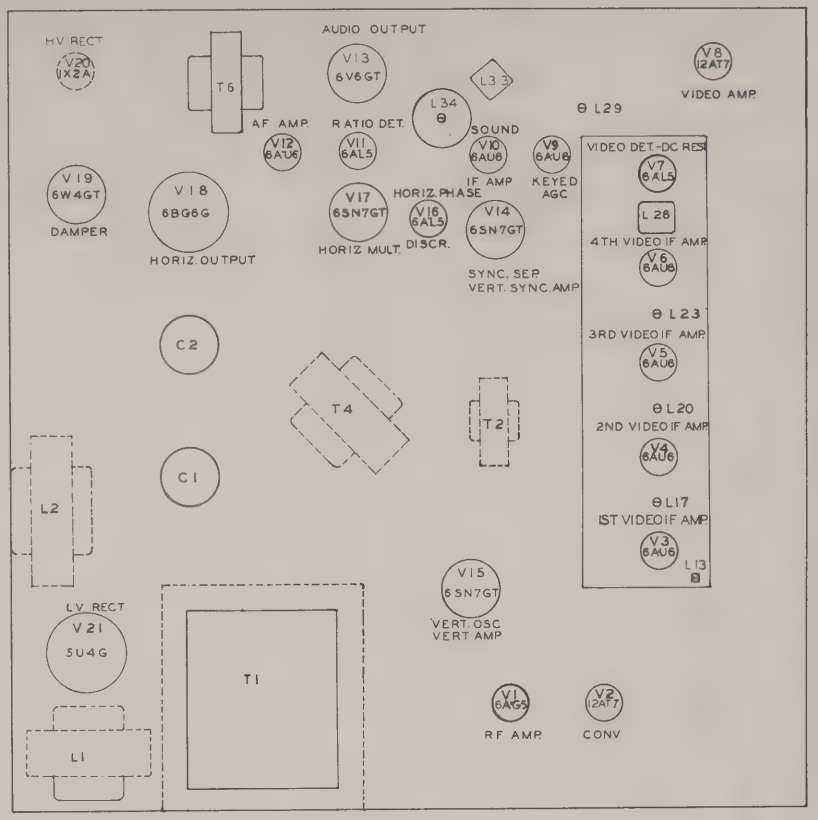
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Turn the tuner to any high band channel which causes no interference.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube, (V2). Low side to chassis.	Not used	26.5 MC (Unmod.)	Any high channel(see note above)	USE VTVM DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain 1 volt reading.
2.	"	"	"	24.1 MC	"	"	A3, A4	"
3.	"	"	"	25.4 MC	"	"	A5	"
4.	"	"	25 MC (10MC SWP)	23.75 MC 26.75 MC	"	Vert. amp. to point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A5 for proper response. If proper response cannot be obtained by readjusting A5 repeat entire alignment.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001 MFD	High side to pin 7, (plate) of 6AL5, (V7). Low side to chassis.	Not used	4.5 MC (400% Mod.)	Any	Vert. amp. to pin 2 of picture tube. Low side to chassis.	A6	Adjust for MINIMUM 400% indication on scope

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point B to chassis. The junction of these two resistors is alignment point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to pin 7, (plate) of 6AL5, (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A7, A8	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point (C). Common to point (D).	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.001 MFD	High side to pin 7,(plate) of 6AL5, (V7). Low side to chassis.	4.5 MC (450KC SWP)	4.5 MC	Any	Vert. amp. to point (B). Low side to chassis.	A7, A8	Disconnect stabilizor capacitor C8. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A9	Reconnect capacitor C8. Adjust A9 so 4.5 MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Pre-set the trimmers as shown in fig. 4.
Turn the tuner to the top of its stroke in low band position.
Adjust all coil cores 1.6 inches from core to coil mounting strip.
Turn the low band oscillator coil core, (L11), an additional 4 turns out of the coil.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.

LOW BAND ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85 MC (10MC SWP)	83.25 MC	6	Vert. amp. to point (A). Low side to chassis.	A10, A11, A12	Adjust for maximum amplitude of response curve.
9.	"	"	"	"	"	"	A13	Adjust to place video marker at 50% on response curve as per fig. 5.
10.	"	"	79 MC (10MC SWP)	77.25 MC	5	"		Adjust tuner until response curve appears on scope with video marker at 50%. If necessary adjust A11 and A12 for compromise which will give best overall response across the low band channels.
			69MC (10MC SWP)	67.25MC	4			
			63MC (10MC SWP)	61.25MC	3			
			57MC (10MC SWP)	55.25MC	2			

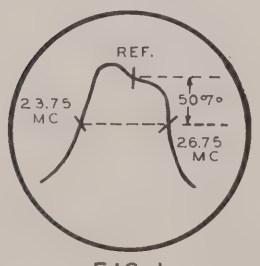


FIG. 1

FIG. 2

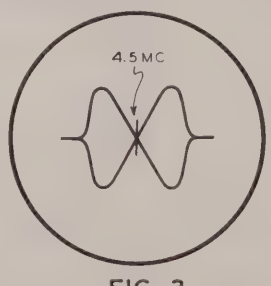


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC	13	Vert. amp. to point (A). Low side to chassis.	A14, A15, A16	Adjust for maximum amplitude of response curve.
12.	"	"	"	"	"	"	A17	Adjust to place video marker at 50% as per fig. 5.
13.	"	"	207MC (10MC SWP)	205.25MC	12	"		Adjust tuner until response curve appears on scope with video marker at 50%. If necessary retouch A15 and A16 for compromise which gives the best response across the high band channels.
			201MC (10MC SWP)	199.25MC	11			
			195MC (10MC SWP)	193.25MC	10			
			189MC (10MC SWP)	187.25MC	9			
			183MC (10MC SWP)	181.25MC	8			
			177MC (10MC SWP)	175.25MC	7			

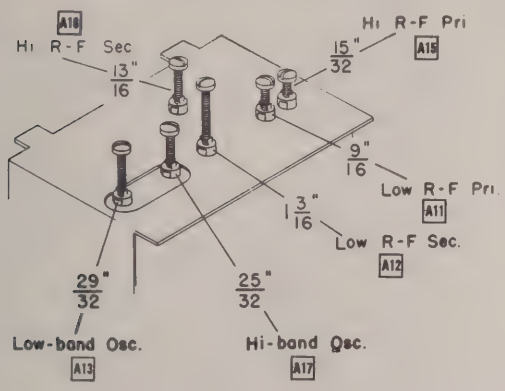


FIG. 4

ALIGNING TRIMMERS

The dimensions shown are approx. from the shoulder of screw head to mounting base

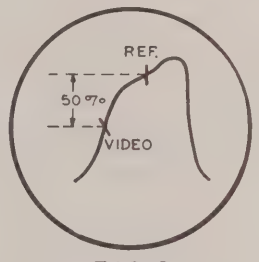


FIG. 5

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	0V	.8VDC	6.3VAC	0V	140VDC	135VDC	.8VDC		
V 2	12AT7	215VDC	§▲-1.2VDC §■-4.5VDC	0V	0V	0V	140VDC	0V	3.3VAC	6.3VAC
V 3	6AU6	0V	0V	0V	6.3VAC	140VDC	140VDC	.9VDC		
V 4	6AU6	0V	0V	0V	6.3VAC	140VDC	140VDC	.9VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	140VDC	140VDC	.9VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	295VDC	140VDC	1.3VDC		
V 7	6AL5	0V	0V	6.2VAC	0V	1.3VDC	0V	-.4VDC		
V 8	12AT7	195VDC	1.1VDC	40VDC	0V	0V	145VDC	-.5VDC	0V	6.3VAC
V 9	6AU6	130VDC	165VDC	¶0V	¶6.3VAC	0V	350VDC	165VDC		
V 10	6AU6	0V	0V	0V	6.3VAC	120VDC	120VDC	1.3VDC		
V 11	6AL5	0V	-.6VDC	6.3VAC	0V	-.3VDC	0V	-.3VDC		
V 12	6AU6	-.8VDC	0V	6.3VAC	0V	2.7VDC	35VDC	0V		
V 13	6V6GT	0V	0V	300VDC	320VDC	0V	350VDC	6.3VAC	22VDC	
V 14	6SN7GT	-2.1VDC	32VDC	0V	-1.1VDC	70VDC	0V	0V	6.3VAC	
V 15	6SN7GT	§-11VDC §-31VDC	27VDC 110VDC	0V	§-.1VDC	450VDC	21VDC	6.3VAC	0V	
V 16	6AL5	1.2VDC	-.3VDC	0V	6.3VAC	1.2VDC	0V	-.2VDC		
V 17	6SN7GT	§-.2VDC	305VDC	12VDC	§-6.6VDC	125VDC	12VDC	0V	6.3VAC	
V 18	6BG6G	0V	0V	0V	-26VDC	-26VDC	0V	6.3VAC	280VDC	Top Cap *
V 19	6W4GT	0V	0V	460VDC	460VDC	350VDC	460VDC	¶6.3VAC	¶0V	
V 20	1X2A	* DO NOT MEASURE								Top Cap *
V 21	5U4G	0V	365VDC	0V	330VAC	0V	330VAC	117VAC	365VDC	
V 22	17BP4A	0V	1.3VDC	PIN 10 455VDC	PIN 11 0V 105VDC	PIN 12 6.3VAC	H. V. CONNECTOR ** 9K.V.			

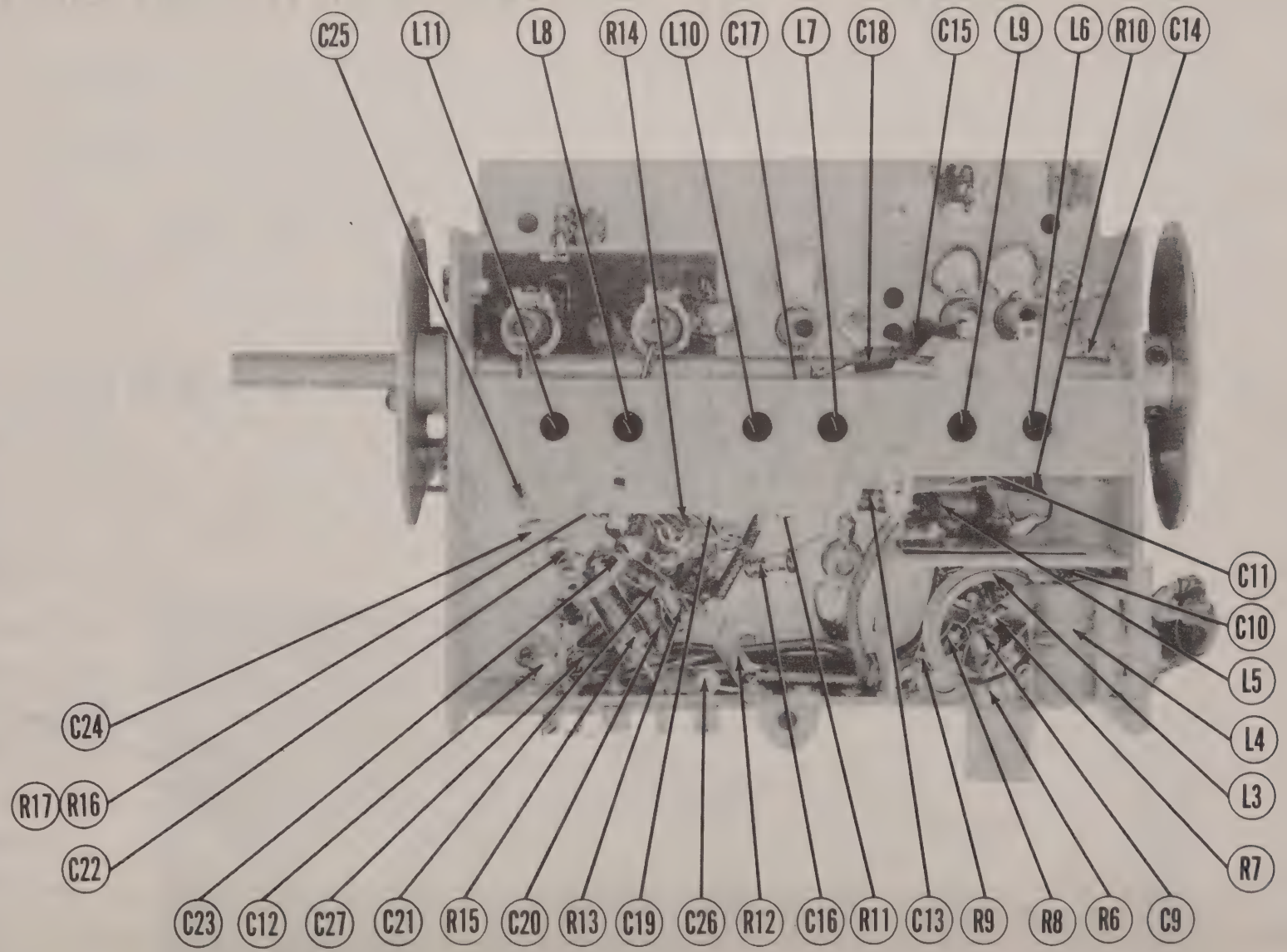
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
ALL MEASUREMENTS TAKEN IN T.V. POSITION
§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE
¶ MEASURED FROM 160VDC LINE
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE
▲ LOW BAND POSITION ■ HIGH BAND POSITION

RESISTANCE READINGS

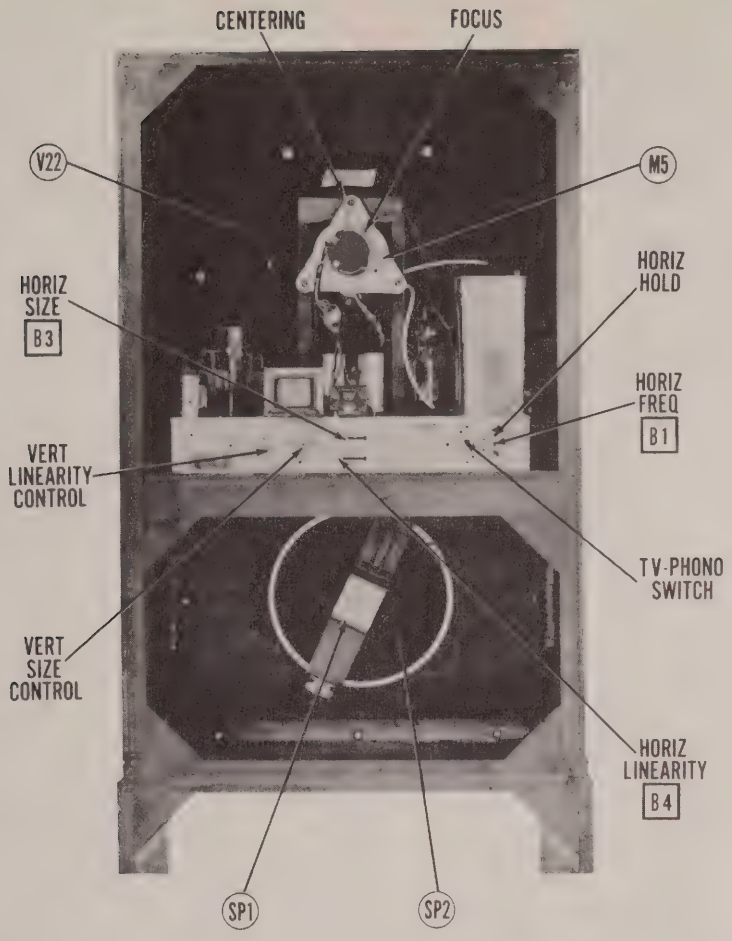
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	43KΩ	68Ω	.1Ω	0Ω	†2.7KΩ	†3.7KΩ	68Ω		
V 2	12AT7	†9.2 KΩ	10KΩ	0Ω	0Ω	0Ω	†2.7KΩ	68KΩ	1.5KΩ	.1Ω
V 3	6AU6	65KΩ	0Ω	0Ω	.1Ω	†2.7KΩ	†2.7KΩ	82Ω		
V 4	6AU6	65KΩ	0Ω	0Ω	.1Ω	†2.7KΩ	†2.7KΩ	82Ω		
V 5	6AU6	65KΩ	0Ω	0Ω	.1Ω	†2.7KΩ	†2.7KΩ	82Ω		
V 6	6AU6	2.5Ω	0Ω	0Ω	.1Ω	†5.6KΩ	†68KΩ	120Ω		
V 7	6AL5	.7Ω	0Ω	.2Ω	0Ω	1Meg	0Ω	3.9KΩ		
V 8	12AT7	†6.5KΩ	1.2Meg	100Ω	0Ω	0Ω	†9.7KΩ	3.9KΩ	0Ω	.1Ω
V 9	6AU6	†19KΩ	†6.5KΩ	¶0Ω	¶.1Ω	60KΩ	†75Ω	†6.5KΩ		
V 10	6AU6	3.5Ω	0Ω	0Ω	.1Ω	†6KΩ	†6KΩ	120Ω		
V 11	6AL5	0Ω	22KΩ	.1Ω	0Ω	Inf.	0Ω	Inf.		
V 12	6AU6	10Meg	0Ω	.1Ω	0Ω	†470KΩ	†1.8Meg	0Ω		
V 13	6V6GT	0Ω	0Ω	†1.5KΩ	†1.1KΩ	470KΩ	†75Ω	.1Ω	820Ω	
V 14	6SN7GT	4.7Meg	†20KΩ	0Ω	2.2Meg	†47KΩ	0Ω	0Ω	.1Ω	
V 15	6SN7GT	1.6Meg 1.5Meg	#1.1Meg	0Ω	1Meg	#700Ω	6KΩ 1KΩ	.1Ω	0Ω	
V 16	6AL5	2.2Meg	150KΩ	0Ω	.1Ω	2.2Meg	0Ω	4.5Meg		
V 17	6SN7GT	4.4Meg	†5.6KΩ	1.5KΩ	120KΩ	†270KΩ	1.5KΩ	0Ω	.1Ω	
V 18	6BG6G	Inf.	0Ω	0Ω	1Meg	1Meg	80KΩ	.1Ω	†4.7KΩ	Top Cap #31Ω
V 19	6W4GT	Inf.	Inf.	†3.6KΩ	#10Ω	†75Ω	#5Ω	¶.1Ω	¶0Ω	
V 20	1X2A	PINS 1-9 HAVE INF. RESISTANCE								Top Cap #210Ω
V 21	5U4G	Inf.	18KΩ	Inf.	31Ω	0Ω	29Ω	1Ω	18KΩ	
V 22	17BP4A	0Ω	1Meg	PIN 10 #1KΩ	PIN 11 †125KΩ †80KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
ALL MEASUREMENTS TAKEN IN T.V. POSTION
† MEASURED FROM PIN 8 OF V21
# MEASURED FROM PIN 3 OF V19
¶ MEASURED FROM 160VDC LINE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold thumbscrew clockwise until it hits the stop, and then two full turns counter-clockwise. This is mid-position of its range.

Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.

Turn the hoirzontal drive trimmer, (B2), counter-clockwise until bright vertical lines appear in the picture. Then turn clockwise to one quarter turn past the point where the lines disappear.

Adjust the horizontal size slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

If necessary retouch B1 for optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs and one dial pointer.
2. Remove three screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker.
5. Remove five metal screws from chassis. Remove chassis.
6. Remove two phillips head screws from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR LINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier		6AG5	7BD	
V2	Converter		12AT7	9A	
V3	1st. Video IF Amp.		6AU6	7BK	
V4	2nd. Video IF Amp.		6AU6	7BK	
V5	3rd. Video IF Amp.		6AU6	7BK	
V6	4th. Video IF Amp.		6AU6	7BK	
V7	Video Detector-DC Restorer		6AL5	6BT	
V8	Video Amplifier		12AT7	9A	
V9	Keyed AGC		6AU6	7BK	
V10	Sound IF Amp.		6AU6	7BK	
V11	Ratio Detector		6AL5	6BT	
V12	AF Amplifier		6AU6	7BK	
V13	Audio Output		6V6GT	7AC	
V14	Sync. Separator-Vert. Sync. Amp.		6SN7GT	8BD	
V15	Vert. Oscillator-Vert. Amplifier		6SN7GT	8BD	
V16	Horiz. Phase Discriminator		6AL5	6BT	
V17	Horiz. Mult		6SN7GT	8BD	
V18	Horiz. Output		6HG6G	7BT	
V19	Damper		6W4GT	4CG	
V20A	HV Rectifier		1X2A	7CB	
B	HV Rectifier		1X2	7CB	
V21	LV Rectifier		5U4G	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: AIR LINE PART No	SYLVANIA Part No.	THOMAS Part No	RMA BASE TYPE	NOTES
V22	17BP4A	17BP4A	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	RATING: VOLT	AIR LINE PART No	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	450	8C-18487	AFH2-54		UPT409		TVL-2759	▲ Filter
B	30	450		PRS25-100				TVA-1207	■ Filter
C	125	25							▲ Vert. Amp. Cathode
C2A	30	450	8C-17845	AFH3-40		UPT36145		TVL-3790	▲ Audio Output Dec.
B	60	450							■ Filter
C	10	450							▲ Decoupling
C3	8	450	8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C4	8	450	8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C5	30	150	8C-19546	PRS150/30		BR2015A		TVA-1410	Decoupling
C6	5	50	8C-19424	PRS150/4		BR550		TVA-1303	AGC Filter
C7	10	75	8C-19564	PRS150/12		BR1015		TVA-1406	Audio Output Cathode
C8	10	75	8C-19564	PRS150/12		BR1015		TVA-1406	Stabilizing Cap.
C9	220		8G-16045	SI220	D6-221		GP1K-221	5GA-T22	RF Coupling
C10	5000		8G-13962	BPD-005	DD-502		811-005	5HK-D5	RF Amp. Cathode
C11	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Screen
C12	1000		[illegible]	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Plate
C13	.68		8G-12495-1		TCZ-.68		NP0K-R68		RF Coupling
C14	15	50	8G-13017		TCZ-15		NP0K-150	5TCC-Q15	Fixed Padder
C15	1000		[illegible]	SI1000	D6-102		GP2L-102	5HK-D1	Fixed Padder
C16	4		[illegible]				NP0K-040		Fixed Padder
C17	1000		[illegible]	SI1000	D6-102		GP2L-102	5HK-D1	Fixed Padder
C18	1.5		8G-12495-8	SII 3NP0	TCZ-1.5		NP0K-1R5		RF Coupling
C19	2.2		8G-12495-4	SII2 2NP0	TCZ-2.2		NP0K-2R2		RF Coupling
C20	51		8G-11891		TCN-51		N750K-510		Conv. Cathode
C21	1		8G-12495-2		TCZ-1		NP0K-010		Osc. Coupling
C22	2.5		8G-19568				N470K-2R5		Fixed Trimmer
C23	15		8G-13017		TCZ-15		NP0K-150	5TCC-Q15	Fixed Trimmer *
C24	51		8G-11891		TCN-51		N750K-510		Osc. Feedback
C25	7		8G-19572				N470K-070		Fixed Padder
C26	1000		8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C27	220		8G-16045	SI220	D6-221		GP2K-221	5GA-T22	Fil. Bypass
C28	5000		[illegible]	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Mixer-Plate Dec.
C29	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C30	100	500	8F3-8	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C31	1000		[illegible]	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C32	5000		[illegible]	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Dec. †
C33	1000		[illegible]	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Fil.
C34	47	500	[illegible]	1468-00005	D6-470	5W5q5	GP1K-470	1FM-45	IF Coupling
C35	1000		[illegible]	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C36	1000		[illegible]	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Dec.
C37	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Fil.
C38	47	500	[illegible]	1468-00005	D6-470	5W5q5	GP1K-500	1FM-45	IF Coupling
C39	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C40	1000		[illegible]	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C41	5000		[illegible]	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Dec. †
C42	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Fil. *
C43	47	500	8F3-109	1468-00005	D6-470	5W5q5	GP1K-500	1FM-45	IF Coupling
C44	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Plate
C45	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Screen
C46	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Cathode
C47	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Fil. *
C48	1000		8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Fil.
C49	5		[illegible]	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C50	100	500	8F1-113	1469-0001	TCZ-100	5R5T1	NP0-333-101	MS-31	Fixed Trimmer
C51	100	500	8F3-8	1468-0001	D6-1015	5W5T1	GP1K-101	1FM-31	Video Coupling
C52	.01	400	8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Video Coupling
C53	22		[illegible]		TCN-22		N750K-220	5TCU-Q22	Video Amp. Cathode
C54	.1	600	8D-18861	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C55	3.3		8G-12495-5	SI3.3NP0	TCZ-3.3		NP0K-3R3		Sound IF Coupling
C56	.002	600	[illegible]	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Sound IF Decoupling
C57	5000		[illegible]	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Cathode
C58	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C59	500	500		SI500	D6-561	1W5T6	GP2K-561	MS-36	RF Bypass

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	AIR LINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C60	2000		8G-16049	SI2000	D6-202	1W5D2	GP2-333-202	5HK-D2	De-emphasis
C61	.01	200	8D-17258	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C62	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C63	.01	200	8D-17258	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C64	.1	400	8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	AF Amp. Screen
C65	.01	400	8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C66	.005	600	8D-19258	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C67	470	500	8F3-121	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Sync. Coupling
C68	.1	200	8D-17259	P288-1	DF-104	PTE4P1		2TM-P1	Sync. Coupling
C69	.01	400	8D-17270	P488-01	D6-102	PTE4S1	GP2-333-103	4TM-S1	Sync. Amp. Plate
C70	.005	400	8D-19258	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Osc. Grid
C71	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Integrator Net.
C72	.05	400	8D-14461	P488-05	DF-503	PTE4S5		4TM-S5	Vert. Discharge
C73	.25	400	8D-17784	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C74	.05	400	8D-14461	P488-05	DF-503	PTE4S5		4TM-S5	Vert. Sweep Coupling
C75	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Integrator Net.
C76	.1	400	8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C77	470	500	8F3-121	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Sync. Coupling
C78	220	500	8F3-117	1469-00025		5R5T25			Horiz. Feedback
C79	680	500	8F3-123	1479-0007		2R5T7		MS-37	Voltage Divider
C80	680	500	8F3-123	1479-0007		2R5T7		MS-37	Voltage Divider
C81	220	500	8F3-117	1469-00025		5R5T25			Horiz. Feedback
C82	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	AFC Filter
C83	2000		8G-16049	SI2000	D6-202	1W5D2	GP2-333-202	5HK-D2	Horiz. MV Grid
C84	3900	500	8F11-132	1464-004		1DR5D4			Fixed Trimmer
C85	220	500	8F3-117	1469-00025		5R5T25			Horiz. MV Feedback
C86	330	500	8F3-119	1469-00035					Horiz. Discharge ¶
C87	.001	600	8D-19193	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sweep Coupling
C88	47		8G-12198	SI47N750	TCN-47		N750K-470	5TCU-Q47	Horiz. Feedback
C89	.1	600	8D-18861	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Screen
C90	.02	200	8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Damper Filter
C91	150			SII50	D6-151	5W5T15	GP2K-151	5GA-T15	Fixed Trimmer
C92	.15	200	8D-15667	P288-15				2TM-P15	Horiz. Sweep Coupling *
C93	680	500	8F3-123	1479-0007		2R5T7		MS-37	Voltage Divider
C94	.1	200	8D-17259	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C95	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C96	5000		8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass

* Not used in all models.
† Some models use 1000MMF. in this application. (Part # 8G-13201)
‡ Some models use 820MMF. in this application. (Part # 8F6-124)
¶ Some models use 750MMF in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	AIR LINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	½	A-10B-18441	Concentrikit	RTV-218	SBB-617-S	Contrast Control - Front
B	1Meg	½		B17-114 #			Volume Control and SW - Rear
				B18-137XA #			
				E202 #			
				76-2 #			
R2A	50KΩ	½	A-10B-17764	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	100KΩ	½	A-10B-17275	Q11-128	AG-45-S	AN-40	Vertical Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	750KΩ	½	A-10B-19220	Q11-137 †	AG-61-S	AN-69	Vertical Size Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	5000Ω	½	A-10B-19218	Q11-114	AG-19-S	AN-10	Vertical Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A per instructions

Additional parts to be used with Concentrikit.
† Shunt the control with a BTS-3.3Meg resistor.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	AIR LINE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R6	680KΩ 20%	½		BTS-680K	Antenna Isolation - See Note 1
R7	680Ω	½	9B1-60	BTS-680	Antenna Coil Shunt
R8	10KΩ	½	9B1-74	BTS-10K	AGC Network
R9	68Ω	½	9B1-48		RF Amp. Cathode
R10	1000Ω 20%	½	9B1-13	BTS-1000	RF Amp. Screen Decoupling
R11	5600Ω	½	9B1-71	BTS-5600	Mixer Grid Coil Shunt
R12	68KΩ	½	9B1-84		Mixer Grid Coil Shunt
R13	1500Ω	½		BTS-1500	Mixer Cathode - See Note 2
R14	10KΩ	½	9B1-74		Osc. Grid
R15	8200Ω	½	9B2-73		Osc. Plate
R16	10Ω 20%	½	9B1-38		Parasitic Suppressor
R17	10Ω 20%	½	9B1-38		Parasitic Suppressor
R18	1000Ω	½	9B1-13	BTS-1000	Mixer Plate Decoupling - See Note 8
R19	8200Ω	½	9B1-73		1st. Video IF Amp. Grid
R20	82Ω	½	9B1-49	BTS-82	1st. Video IF Amp. Cathode
R21	1000Ω	½	9B1-13	BTS-1000	1st. Video IF Amp. Decoupling - See Note 8
R22	1000Ω	½	9B1-13	BTS-1000	AGC Network - See Note 8
R23	6800Ω	½	9B1-72		2nd. Video IF Amp. Grid
R24	82Ω	½	9B1-49	BTS-[illegible]	2nd. Video IF Amp. Cathode
R25	1000Ω	½	9B1-13	BTS-1000	2nd. Video IF Amp. Decoupling - See Note 8
R26	1000Ω	½	9B1-13	BTS-1000	AGC Network - See Note 8
R27	6800Ω	½	9B1-72		3rd. Video IF Amp. Grid
R28	82Ω	½	9B1-49	BTS-82	3rd. Video IF Amp. Cathode
R29	1000Ω	½	9B1-13	BTS-1000	3rd. Video IF Amp. Decoupling - See Note 8
R30	6800Ω	½	9B1-72		4th. Video IF Transformer Shunt
R31	120Ω	2	9B1-51	BTS-120	4th. Video IF Amp. Cathode
R32	68KΩ	1	9B2-84	BTA-68K	4th. Video IF Amp. Screen
R33	12KΩ	½	9B1-75		4th. Video IF Amp. Plate - See Note 9
R34	5600Ω 20%	½	9B1-71	BTS-5600	4th. Video IF Amp. Plate Decoupling
R35	1000Ω	½	9B1-62	BTS-1000	Decoupling
R36	1000Ω	½	9B1-13	BTS-1000	AGC Network - See Note 8
R37	3900Ω	½	9B1-69	BTS-3900	Video Amp. Grid
R38	2200Ω	½	9B1-66	BTS-2200	Video Amp. Plate
R39	1000Ω	½	9B1-62	BTS-1000	Video Amp. Plate
R40	10KΩ	½	9B1-74	BTS-10K	Isolation
R41	47KΩ	2	9B4-82	BTB-47K	Voltage Divider
R42	4700Ω	1	9B2-70	BTA-4700	Decoupling

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	AIR LINE PART No.	IRC PART No.	IDENTIFICATION CODES
R43	1500Ω	10	9C14-1101	1 3/4A-1500	Decoupling - Wire Wound
R44	1.2Meg 20%	½	9B1-102	BTS-1.2Meg	Video Amp. Grid - See Note 13
R45	100Ω	½	9B1-50	BW-½-100	Video Amp. Cathode
R46	47KΩ	½	9B1-82	BTS-47K	Video Peaking Coil Shunt
R47	4700Ω	2	9B4-70	BTB-4700	Video Amp. Plate
R48	1200Ω	10	9C14-1100	1 3/4A-1200	Decoupling - Wire Wound
R49	1Meg	½	9B1-98	BTS-1Meg	DC Restorer Diode Load
R50	22KΩ	½	9B1-78	BTS-22K	Picture Tube Grid
R51	60KΩ	½		BTS-56K	Picture Tube Cathode - See Note 3
R52	1000Ω	½	9B1-62	BTS-1000	Acc. Anode Load
R53	5000Ω 5%	½		BTS-4700	AGC Filter - See Note 4
R54	68KΩ	½	9B1-84	BTS-68K	AGC Network
R55	33KΩ	½	9B1-80	BTS-33K	AGC Network
R56	120Ω	½	9B1-51	BTS-120	Sound IF Amp. Cathode
R57	2200Ω	½	9B1-66	BTS-2200	Sound IF Amp. Decoupling
R58	22KΩ	½	9B1-78	BTS-22K	Ratio Detector Diode Load
R59	22KΩ	½	9B1-78	BTS-22K	De-emphasis
R60	33KΩ	½		BTS-33K	Tone Compensation - See Note 5
R61	10Meg	½	9B1-37	BTS-10Meg	AF Amp. Grid
R62	1.8Meg 20%	½	9B1-101	BTS-1.8Meg	AF Amp. Screen
R63	470KΩ 20%	½	9B1-29	BTS-470K	AF Amp. Plate
R64	470KΩ 20%	½	9B1-29	BTS-470K	Output Grid
R65	820Ω	1	9B2-81	BTA-280	Output Cathode - See Note 10
R66	1000Ω	2	9B4-62	BW-2-1000	Decoupling - Wire Wound
R67	4.7Meg	½	9B1-106	BTS-4.7Meg	Sync. Separator Grid
R68	68KΩ	2	9B4-84	BTB-68K	Sync. Separator Plate
R69	680Ω	½	9B1-72	BTS-680	Voltage Divider
R70	2.2Meg	½	9B1-102	BTS-2.2Meg	Vertical Sync. Amp. Grid
R71	47KΩ	2	9B4-82	BTB-47K	Vertical Sync. Amp. Plate
R72	47KΩ	½	9B1-82	BTS-47K	Integrator
R73	1.5Meg	½	9B1-100	BTS-1.5Meg	Vertical Osc. Grid
R74	220KΩ	½	9B1-90	BTS-220K	Vertical Osc. Plate
R75	47KΩ	½	9B1-82	BTS-47K	Voltage Divider
R76	390KΩ	1		BTS-390K	Voltage Divider - See Note 1
R77	1Meg	½	9B1-98	BTS-1Meg	Vertical Amp. Grid
R78	100KΩ	½	9B1-82	BTS-1000	Vertical Amp. Cathode
R79	12.5KΩ	½		BTS-12K	Vertical Retrace Blanking - See Note 6
R80	1000Ω	½	9B1-62	BTS-1000	Vertical Retrace Blanking
R81	150KΩ	½	9B1-88	BTS-150K	Horiz. Phase Discriminator Diode Load
R82	2.2Meg	½	9B1-102	BTS-2.2Meg	Horiz. Phase Discriminator Diode Load
R83	2.2Meg	½	9B1-102	BTS-2.2Meg	Horiz. Phase Discriminator Diode Load
R84	150KΩ	½	9B1-88	BTS-150K	Horiz. Phase Discriminator Diode Load
R85	1Meg	½	9B1-98	BTS-1Meg	Horiz. Feedback
R86	680KΩ	½	9B1-96	BTS-680K	Horiz. Feedback
R87	68KΩ	½	9B1-84	BTS-68K	AFC Filter
R88	1500Ω	½	9B1-64	BTS-1500K	Horiz. MV Cathode
R89	5600Ω	1	9B2-71	BTA-5600	Horiz. MV Plate
R90	270KΩ	½	9B1-91	BTS-270K	Horiz. MV Plate
R91	120KΩ	½	9B1-87	BTS-120K	Horiz. MV Grid
R92	220Ω	½	9B1-54		Parasitic Suppressor
R93	1Meg	½	9B1-98	BTS-1Meg	Horiz. Output Grid
R94	4700Ω	1	9B2-70	BTA-4700	Horiz. Output Screen
R95	3800Ω	5	9C12-2061	1 3/4A-3500	Decoupling - See Notes 7 and 10
R96	10Ω	½			Damping - See Note 11
R97	2.2Ω	½	9C1-1067		H. V. Filament - See Note 12
R98	390KΩ	1		BTA-390K	Isolation - See Note 1
R99	68KΩ	½	9B1-84	BTS-68K	Voltage Divider - See Note 10
R100	3300Ω	½	9B1-68	BTS-3300	Vertical Peaking
R101	220KΩ	½	9B1-90	BTS-220K	Vertical Osc. Decoupling

Note 1 Some models use 470KΩ in this application.
Note 2 Some models use 1200Ω in this application.
Note 3 Some models use 100KΩ in this application.
Note 4 Some models use 2200Ω in this application.
Note 5 Some models use 47KΩ in this application.
Note 6 Some models use 15KΩ in this application.
Note 7 Some models use 5600Ω 3W in this application.
Note 8 Some models use 2.2 Microhenries RF Choke in this application.
Note 9 Some models use resistors in series to obtain the desired value.
Note 10 Some models use resistors in parallel to obtain the desired value.
Note 11 Not used in all models.
Note 12 Some models use Choke Coil in this application.
Note 13 Some models use 2.2Meg resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	AIR LINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ④ 1.9A	640VCT .250ADC	5VAC ③ 3A	6.3VAC ④ 1.5A SEC. 4 6.3VAC ④ 7.2A	12A-18839 or 12A-18839-1	P-8159	P-3059	TP-395 and F-633 ①

① Mount separately where space permits.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	AIR LINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	1.1KΩ	12M-18241	A-8111 ②	A-3000 ②	TBO-1 ②	Vert. Block Osc. Trans.
T3	210Ω	8.5Ω	201-19817				Horiz. Output Trans.
	Tap 30Ω	Tap .5Ω	201-19817-1 ③				
		SEC. 2					
		2Ω					
		Tap 10Ω					
		SEC. 3					
		0Ω					
T4	700Ω		12C-19048	A-8112	A-3037	TSO-5 ②	Vert. Output Trans.
	Tap 8.5Ω						
T5A	15.5Ω		201-19490	DY-7	MDF-70		Horiz. Deflection Coils
B	65Ω						Vert. Deflection Coils

② Drill one new mounting hole.
③ Used in model 15BR-3053B only.

AIRLINE MODEL 15BR-3053A, B

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T6	4.8KΩ	3.5Ω	415Ω	.5Ω	12C18743-1	A-3823 ②	A-3019	RO-9 ②	② Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AIRLINE PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.5Ω	18A18865	10J12	10A4A	
	CONE DIA.	V. C. DIA.				
SP2	9 3/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∽)	AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250A	38Ω	1.3Henries	16A-17959	C-2326 ②	C-2991 ②	TR-3300 ②	② Drill one new mounting hole.
L2	.250A	38Ω	1.3Henries	16A-17959	C-2326 ②	C-2991 ②	TR-3300 ②	

COILS (RF-IF)

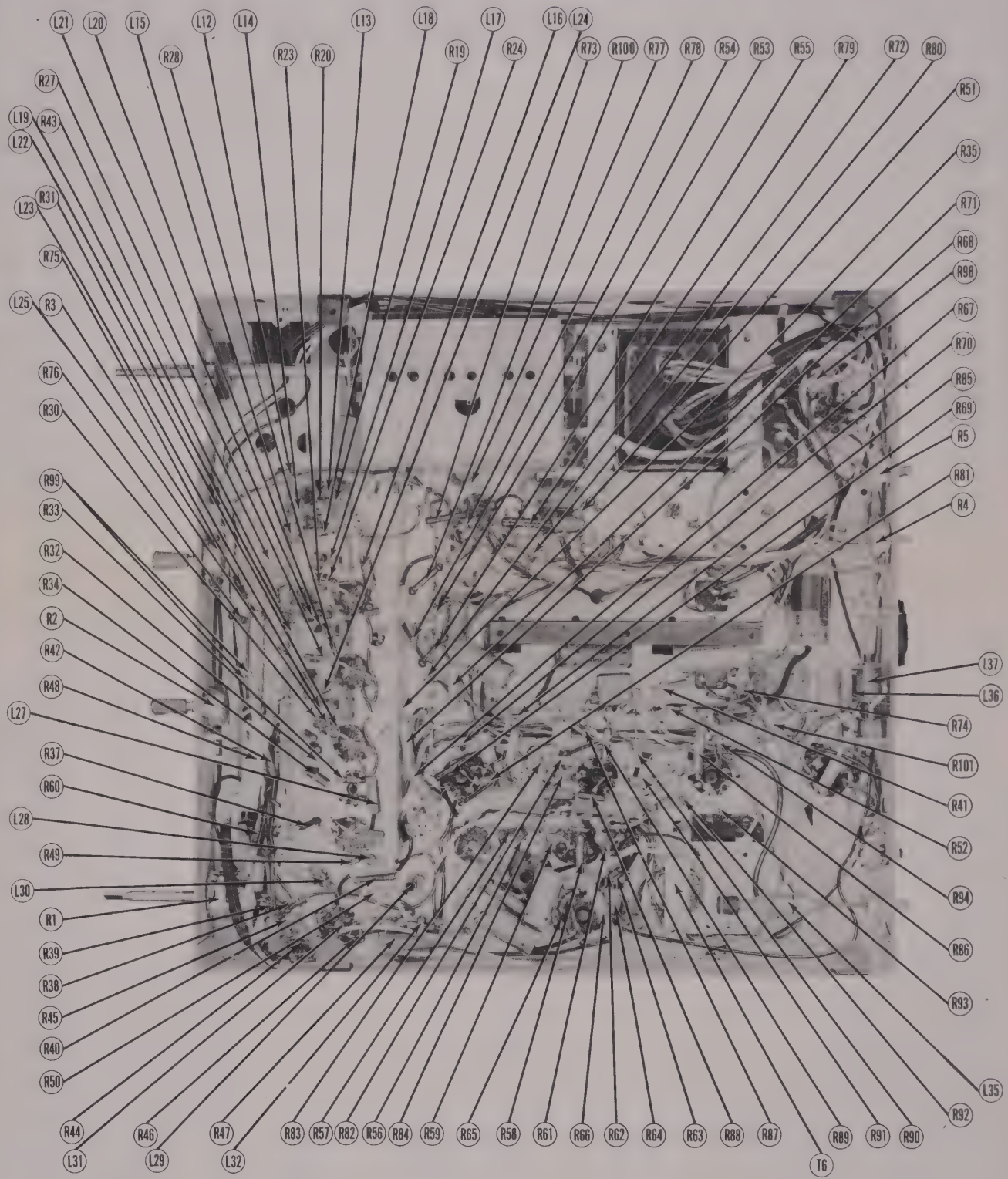
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AIRLINE PART No.	IRC PART No.	
L3	Ant. Coil	.1Ω	.1Ω	201-17142		High Band
L4	Ant. Coil	.1Ω	.1Ω			Low Band
L5	Plate Choke	.8Ω		16A-17128		
L6	RF Coil	.1Ω		13E-17140		High Band
L7	Mixer Grid Coil	.1Ω		13E-17140		High Band
L8	Osc. Coil	.1Ω		13E-17140		High Band
L9	RF Coil	.1Ω		13E-12046		Low Band
L10	Mixer Grid Coil	.1Ω		13E-12046		Low Band
L11	Osc. Coil	.1Ω		13D-12155		Low Band
L12	Plate Choke	11Ω		16A-18025		
L13	1st. Video IF	.3Ω		13M-19512		
L14	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries
L15	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries
L16	Fil. Choke	.1Ω		201-15609		
L17	2nd. Video IF	.2Ω		201-15621		
L18	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries
L19	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries
L20	3rd. Video IF	.2Ω		201-15621		
L21	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries
L22	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries
L23	4th. Video IF	.2Ω		201-15621		
L24	RF Choke	1.8Ω		16A-18676	CLA	2.2 Microhenries
L25	RF Choke	2.5Ω		201-15608		
L26	5th. Video IF	.8Ω	.8Ω	13B-18784		
L27	Fil. Choke	.1Ω		16A-17937		
L28	Peaking	8Ω				83 Microhenries
L29	4.5MC Trap	1.6Ω		201-19458		
L30	Peaking	25Ω		16A-19365		410 Microhenries
L31	Peaking	6.8Ω		16A-19485		240 Microhenries
L32	Peaking	9Ω		16A-19486		380 Microhenries
L33	Sound IF	3.5Ω		13A-19514		
L34	Ratio Det. Trans.	4Ω	.2Ω	13M-19257		Tap .5Ω
L35	Horiz. Osc.	75Ω		13D-19540		
L36	Horiz. Size	.4Ω		13M-18233		
L37	Horiz. Lin.	5.5Ω		13M-19499		Tap 3.7Ω
L38	Fil. Choke	.7Ω		16A-19818		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			AIRLINE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Slo Blo	.250A	46B-18362	55F-18024	312.250	357001	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	RF Tuner		
M3	Switch	20F-12108	TV-Phono
M4	Focus Magnet	55P-19600-1	
M5	Ion Trap	16M-19906	
B2	Trimmer	8E-18508	Horiz. Drive (80-480MMF.)
	Plate	2M-19317	Channel Indicator
	Knob	5B-19170-76	Tuning
	Knob	5B-19164-76	Off/On- Volume
	Knob	5B-19165-76	Contrast
	Knob	25M-18178	Blue Rubber
	Knob	25M-18172	White Rubber



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

ARVIN MODELS
5204CM, 5206CB (Ch. TE300)

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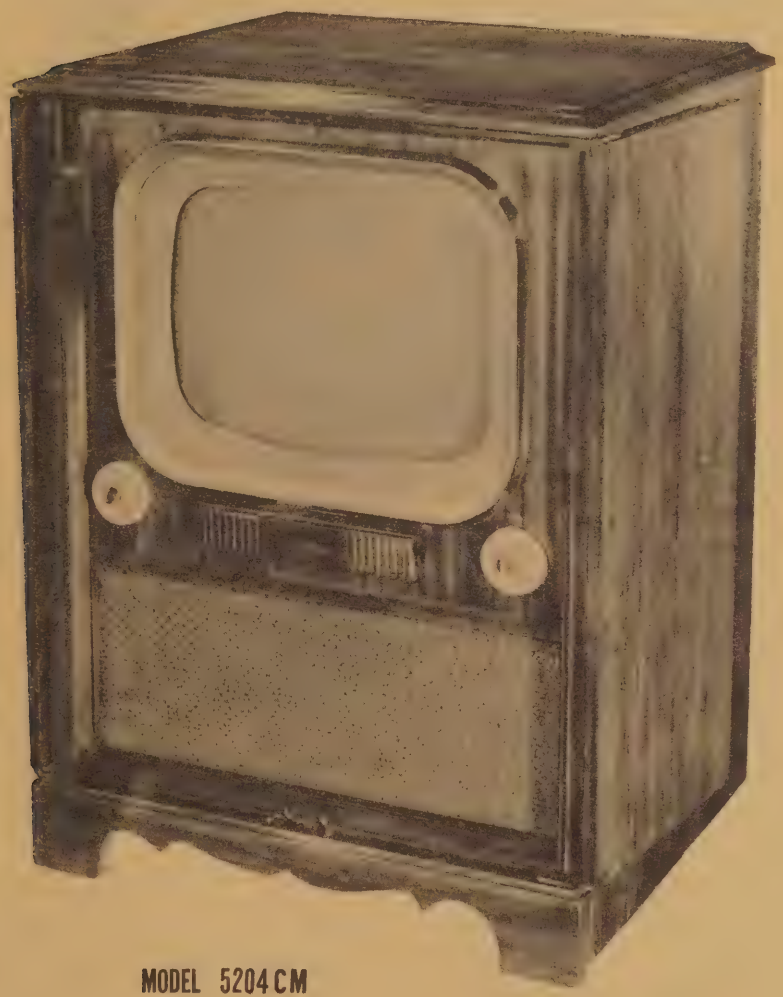

MODEL 5204CM

ARVIN MODELS
5204CM, 5206CB (Ch. TE300)

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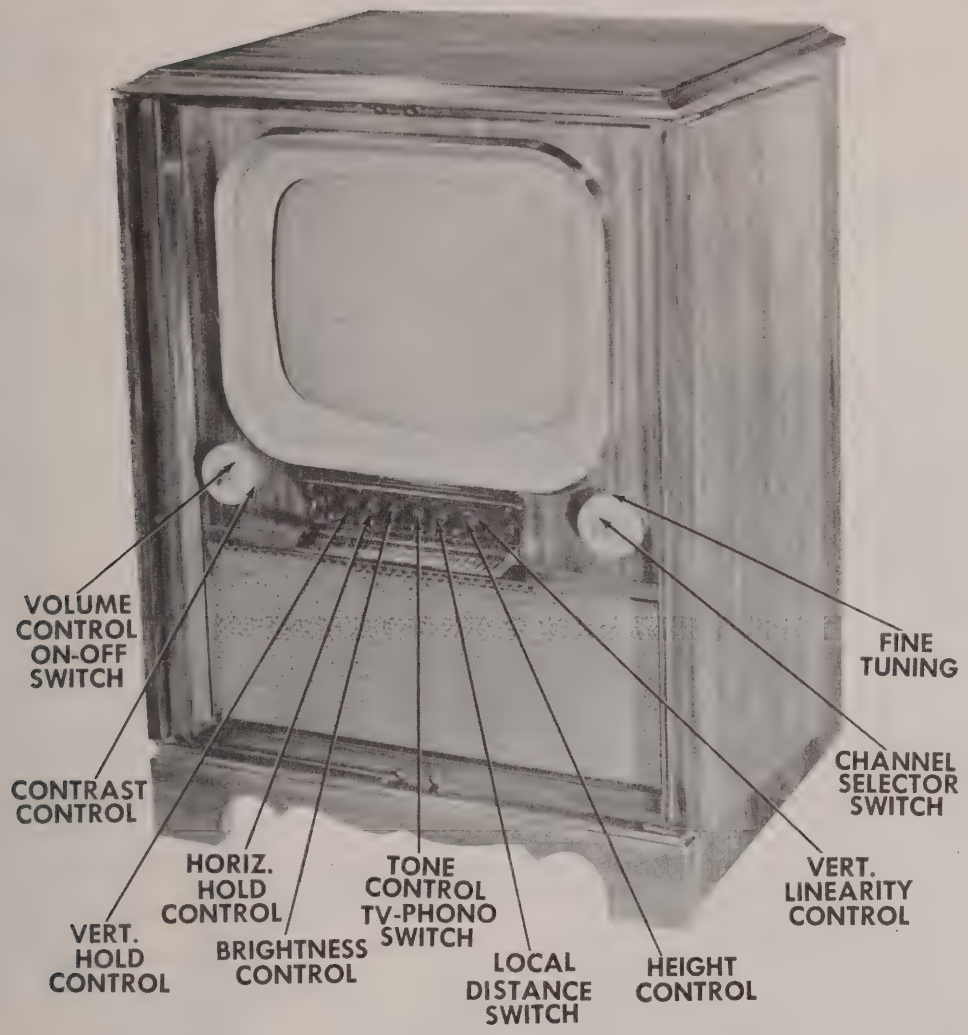
5204CM, 5206CB (Ch. TE300)



ARVIN MODELS
5204CM, 5206CB (Ch. TE300)

ARVIN MODEL 5204CM

TRADE NAME	Arvin, Models 5204CM, 5206CB (Ch. TE300)
MANUFACTURER	Arvin Industries, Columbus, Indiana
TYPE SET	Television Receiver
TUBES	Twenty-six
POWER SUPPLY	110-120 Volts AC 60Cycle — RATING 2.2 Amp. at 117 Volts AC
TUNING RANGE—CHANNELS	2 thru 13

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 11
Horizontal Sweep Circuit Adjustments 11
Parts List and Description 12, 13, 14
Photographs
- Cabinet - Rear View 11
- Capacitor and Alignment Identification 4, 9
- Chassis - Top View 3
- RF Tuner 10
- Resistor and Inductor Identification 15, 16

Schematic 2
Tube Placement Charts 5
Voltage and Resistance Measurements 8

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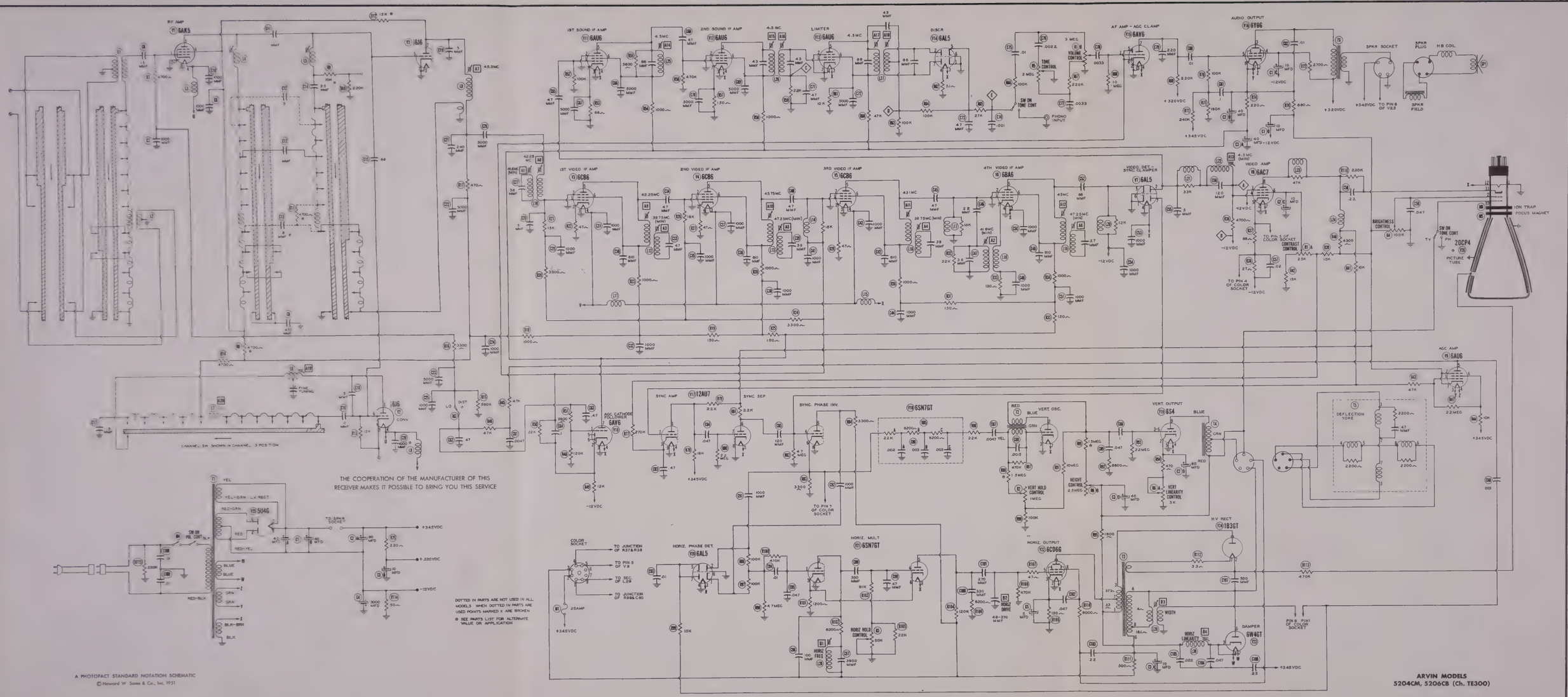
RF AMP
1ST SOUND IF AMP
2ND SOUND IF AMP
LIMITER
DISCR
AF AMP - AGC CLAMP
AUDIO OUTPUT
1ST VIDEO IF AMP
2ND VIDEO IF AMP
3RD VIDEO IF AMP
4TH VIDEO IF AMP
VIDEO DET, SYNC CLAMPER
VIDEO AMP
SYNC AMP
SYNC SEP
SYNC PHASE INV.
VERT. OSC.
VERT. OUTPUT
AGC AMP
HORIZ. PHASE DET.
HORIZ. MULT.
HORIZ. OUTPUT
HV RECT
DAMPER
CONV
AGC CATHODE FOLLOWER
CHANNEL SW SHOWN IN CHANNEL 3 POSITION
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
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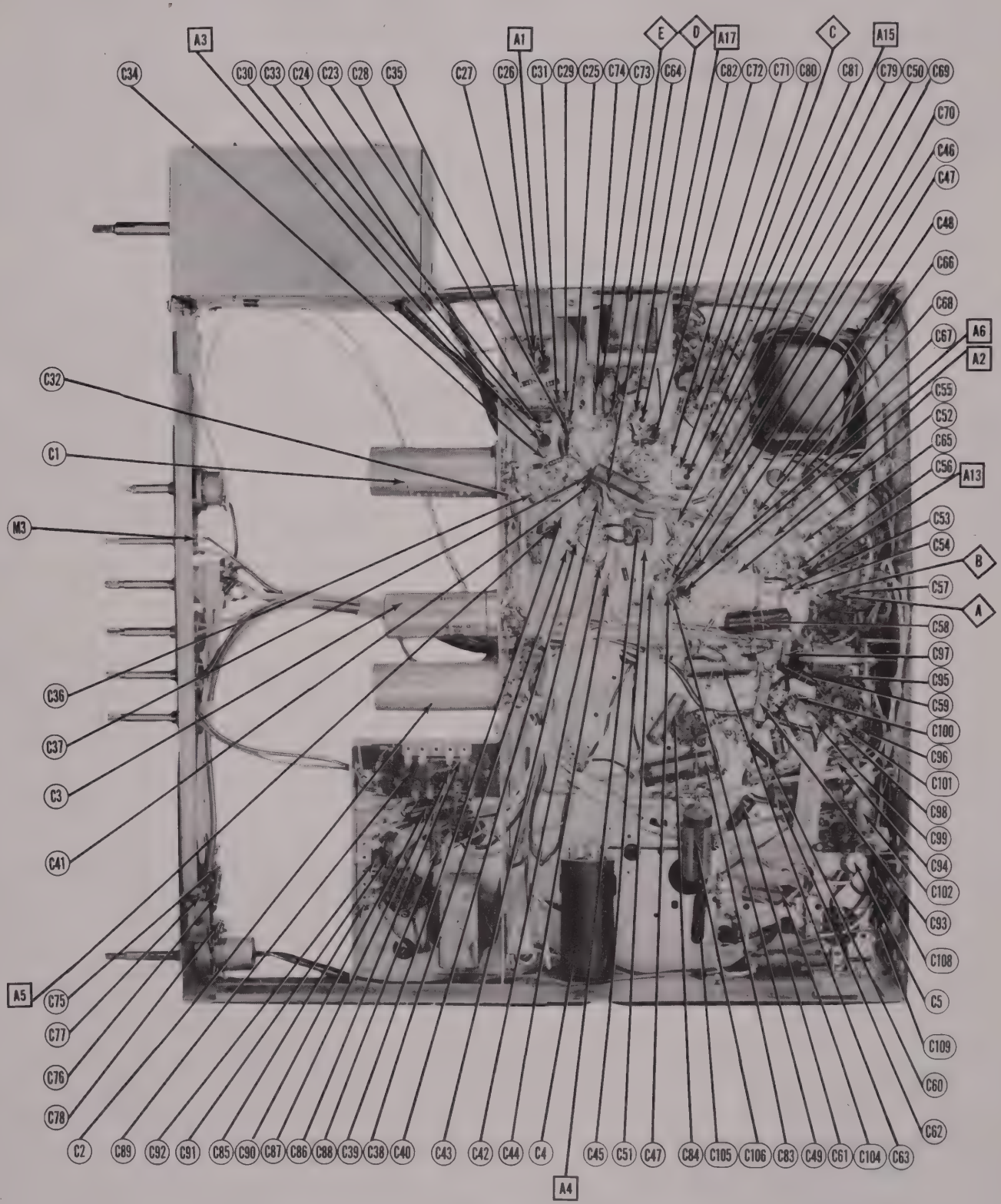
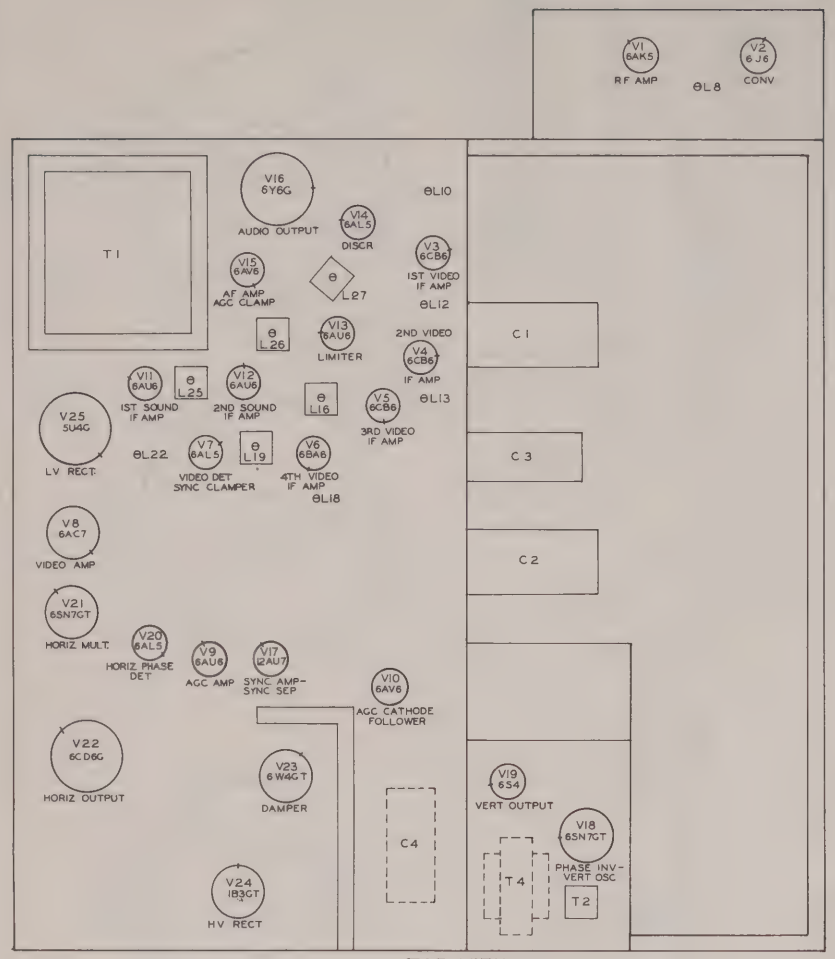
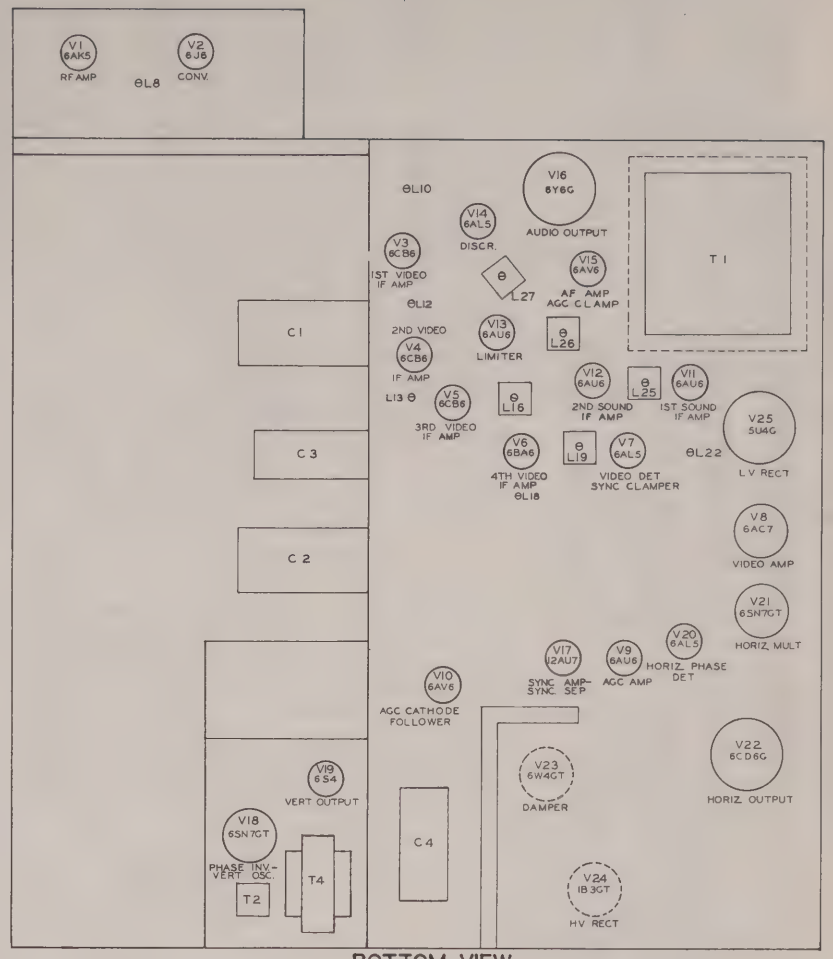
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), from its socket and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to pins 5 and 6 of V15, connect the positive lead to chassis.
During video IF alignment the common lead of the VTVM is connected to approximately 12 volts with respect to chassis. Avoid grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	41.6MC (unmod.)	Any	DC probe to Point (A). Common to Point (B).	A1, A2	Adjust for MINIMUM deflection.
2.	"	"	39.75MC	"	"	A3, A4	"
3.	"	"	47.25MC	"	"	A5, A6	"
4.	"	"	45.3MC	"	"	A7	Adjust for maximum deflection.
5.	"	"	42.25MC	"	"	A8, A9	"
6.	"	"	45.75MC	"	"	A10	"
7.	"	"	43.1MC	"	"	A11	"
8.	"	"	45MC	"	"	A12	

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	44MC (10MC SWP)	41.6MC 42.25MC 42.75MC 45MC 45.75MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A7 thru A12 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to pin 2, (Plate) of 6AL5, (V7). Low side to chassis.	Not used	4.5MC (400~ Mod)	Any	Vert. Amp. to pin 11 of picture tube. Low side to chassis.	A13	Adjust for MINIMUM 400~ indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.001MFD	High side to pin 1, (Grid) of 6AU6, (V11). Low side to chassis.	4.5MC (unmod)	Any	DC probe to Point (C). Common to chassis.	A14, A15, A16	Adjust for maximum deflection.
12.	"	"	"	"	DC probe to Point (D). Common to chassis.	A17	"
13.	"	"	"	"	DC probe to Point (E). Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.001MFD	High side to pin 1, (Grid) of 6AU6, (V11). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. thru 22KΩ to Point (C). Low side to chassis.	A14, A15 A16	Adjust for maximum amplitude and symmetry as per fig. 2.
12.	"	"	"	"	"	Vert. Amp. to Point (E). Low side to chassis.	A18, A17	Adjust A18 until 4.5MC occurs at center of crossover lines as per fig. 3. Adjust A17 for maximum amplitude and straightness of crossover lines. Continue with step 14.

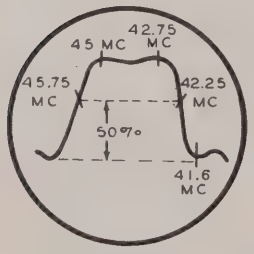


FIG.1

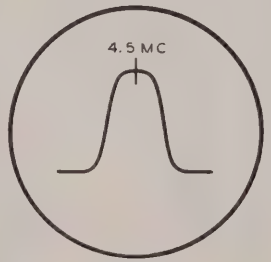


FIG. 2

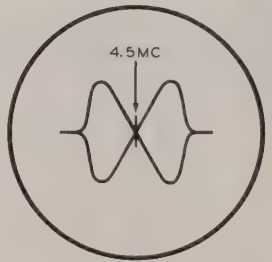


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A19	Adjust to place video marker at 50% on response curve as shown in fig. 4.
15.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all high band channels to see that the video marker can be properly placed well within the range of the fine tuning control. If not make compromise adjustment of A19.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
16.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A20	Adjust to place video marker at 50% on response curve as per fig. 4.
17.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check all low band channels to see that the vi video marker can be properly placed well within the range of the fine tuning control If not make compromise adjustment of A20.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

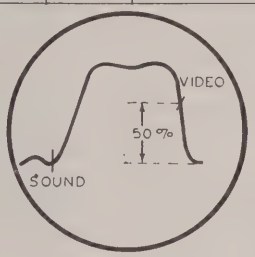


FIG.4

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AK5	-.5VDC	0V	0V	6.1VAC	70VDC	70VDC	0V		
V 2	6J6	70VDC	90VDC	0V	6.2VAC	-.5VDC	§-2.8VDC	0V		
V 3	6CB6	-.1VDC	.6VDC	0V	6.3VAC	105VDC	105VDC	0V		
V 4	6CB6	-.1VDC	.6VDC	6.3VAC	0V	105VDC	105VDC	0V		
V 5	6CB6	0V	.6VDC	0V	6.3VAC	105VDC	105VDC	0V		
V 6	6BA6	0V	0V	6.3VAC	0V	105VDC	105VDC	1.7VDC		
V 7	6AL5	0V	-12VDC	6.3VAC	0V	-11.8VDC	0V	-.4VDC		
V 8	6AC7	0V	0V	-12VDC	-12VDC	-12VDC	42VDC	6.3VAC	135VDC	
V 9	6AU6	140VDC	150VDC	▲0V	▲6.3VAC	-.5VDC	340VDC	150VDC		
V 10	6AV6	-.4VDC	-.9VDC	0V	6.3VAC	-.3VDC	-.3VDC	130VDC		
V 11	6AU6	0V	0V	0V	6.3VAC	115VDC	115VDC	.8VDC		
V 12	6AU6	0V	0V	0V	6.3VAC	115VDC	115VDC	1.3VDC		
V 13	6AU6	-.3VDC	0V	6.3VAC	0V	13VDC	13VDC	0V		
V 14	6AL5	0V	-.3VDC	6.1VAC	1.2VAC	-.5VDC	0V	-.5VDC		
V 15	6AV6	-.5VDC	0V	0V	6.3VAC	-.6VDC	-.6VDC	100VDC		
V 16	6Y6G	0V	▲6.3VAC	▲130VDC	▲135VDC	▲-8VDC	▲-150VDC	▲0V	150VDC	
V 17	12AU7	▲90VDC	▲-20VDC	▲-8.9VDC	6.3VAC	6.3VAC	55VDC	-.9VDC	0V	0V
V 18	6SN7GT	§-8VDC §-20VDC	55VDC 115VDC	0V	§-47VDC	325VDC	1VDC	6.3VAC	0V	
V 19	6S4	0V	6.4VDC 25VDC	-.4VDC	6.3VAC	0V	-.4VDC	0V	0V	315VDC 325VDC
V 20	6AL5	6.1VDC	-6.5VDC	6.3VAC	0V	0V	0V	0V		
V 21	6SN7GT	§.2VDC §1.5VDC	150VDC	12VDC	§ -11VDC	175VDC	12VDC	0V	6.3VAC	
V 22	6CD6G	0V	0V	13VDC	0V	-10.7VDC	270VDC	6.3VAC	115VDC	Top Cap *
V 23	6W4GT	0V	0V	420VDC	0V	270VDC	0V	420VDC	420VDC	
V 24	1B3GT	* DO NOT MEASURE								Top Cap *
V 25	5U4G	350VDC	360VDC	130VDC	320VAC	-12.5VDC	320VAC	0V	360VDC	
V 26	20CP4	0V	0V 150VDC	PIN 10 370VDC	PIN 11 125VDC	PIN 12 6.3VAC	H.V. CONNECTOR ** 10K.V.			

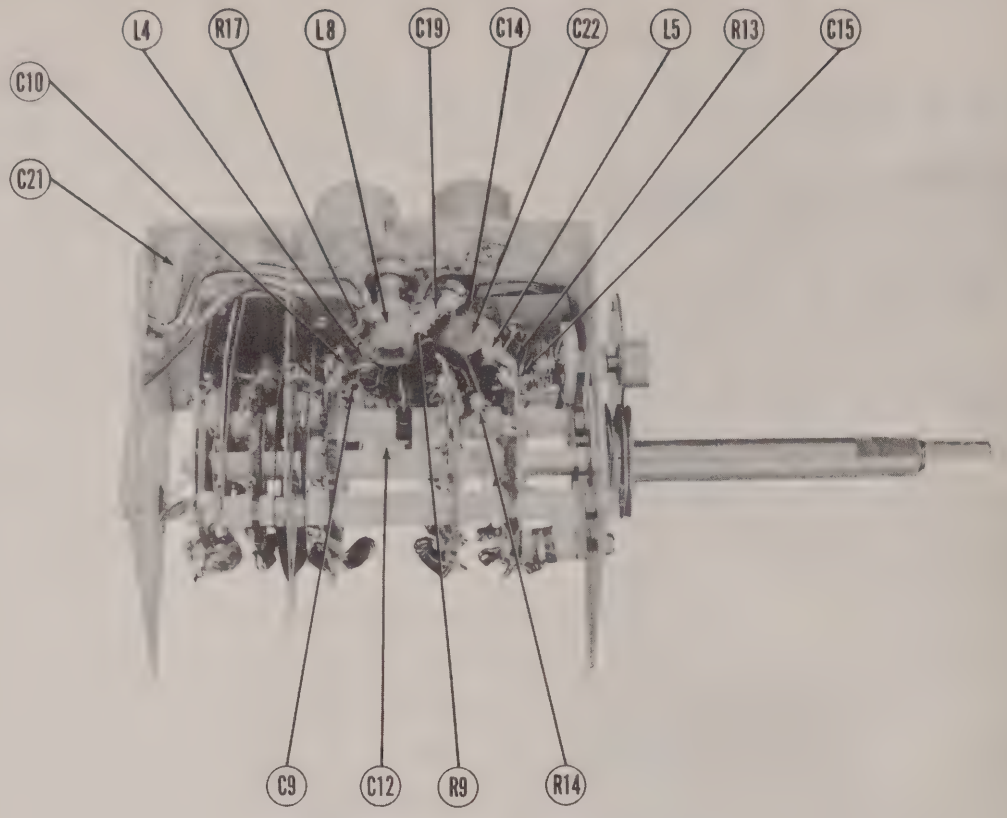
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AK5	134KΩ	0Ω	0Ω	.2Ω	▲6.2KΩ	▲6.2KΩ	0Ω		
V 2	6J6	▲6.2KΩ	▲1.9KΩ	0Ω	.2Ω	230KΩ	15KΩ	0Ω		
V 3	6CB6	55KΩ	47Ω	0Ω	.1Ω	▲1.5KΩ	▲1.5KΩ	0Ω		
V 4	6CB6	55KΩ	47Ω	.1Ω	0Ω	▲1.4KΩ	▲1.4KΩ	0Ω		
V 5	6CB6	32KΩ	47Ω	0Ω	.1Ω	▲1.5KΩ	▲1.5KΩ	0Ω		
V 6	6BA6	1.4Ω	0Ω	.1Ω	0Ω	▲1.4KΩ	▲1.4KΩ	120Ω		
V 7	6AL5	0Ω	4.7KΩ	.1Ω	0Ω	50Ω	0Ω	4.7Meg		
V 8	6AC7	0Ω	0Ω	50Ω	4.7KΩ	80Ω	▲19KΩ	.1Ω	▲5KΩ	
V 9	6AU6	▲61KΩ	▲680Ω	▲0Ω	▲.1Ω	200KΩ	†10KΩ	▲680Ω		
V 10	6AV6	120KΩ	12KΩ	0Ω	.1Ω	Inf.	Inf.	▲220Ω		
V 11	6AU6	100KΩ	0Ω	0Ω	.1Ω	▲1.2KΩ	▲1.2KΩ	68Ω		
V 12	6AU6	470KΩ	0Ω	0Ω	.1Ω	▲1.2KΩ	▲1.2KΩ	150Ω		
V 13	6AU6	22KΩ	0Ω	.1Ω	0Ω	▲18KΩ	▲18KΩ	0Ω		
V 14	6AL5	0Ω	100KΩ	.1Ω	2.2Ω	200KΩ	0Ω	100KΩ		
V 15	6AV6	10Meg	0Ω	0Ω	.1Ω	34KΩ	34KΩ	†270KΩ		
V 16	6Y6G	Inf.	▲.1Ω	†415Ω	†2.9KΩ	230KΩ	.4Ω	▲0Ω	12KΩ	
V 17	12AU7	▲15KΩ	▲15KΩ	▲280KΩ	.1Ω	.1Ω	▲22KΩ	2.2Meg	0Ω	0Ω
V 18	6SN7GT	2.6Meg 1.6Meg	#2.8Meg #1.3Meg	0Ω	4.7Meg	†3.3KΩ	3.3KΩ	.1Ω	0Ω	
V 19	6S4	Inf.	3.5KΩ 470Ω	2.2Meg	.1Ω	0Ω	2.2Meg	Inf.	Inf.	#3.2KΩ
V 20	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	15KΩ	0Ω	15KΩ		
V 21	6SN7GT	5.1Meg	†8.2KΩ	1.2KΩ	110KΩ 95KΩ	†120KΩ	1.2KΩ	0Ω	.1Ω	
V 22	6CD6G	Inf.	0Ω	150Ω	Inf.	470KΩ	†500Ω	.1Ω	†8.5KΩ	Top Cap #33Ω
V 23	6W4GT	Inf.	Inf.	190KΩ	Inf.	†500Ω	Inf.	#.2Ω	#0Ω	
V 24	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #400Ω
V 25	5U4G	#1.8KΩ	15KΩ	▲220Ω	68Ω	50Ω	68Ω	Inf.	15KΩ	
V 26	20CP4	0Ω	▲12KΩ ▲680Ω	PIN 10 #1.8KΩ	PIN 11 ▲220KΩ	PIN 12 .1Ω				

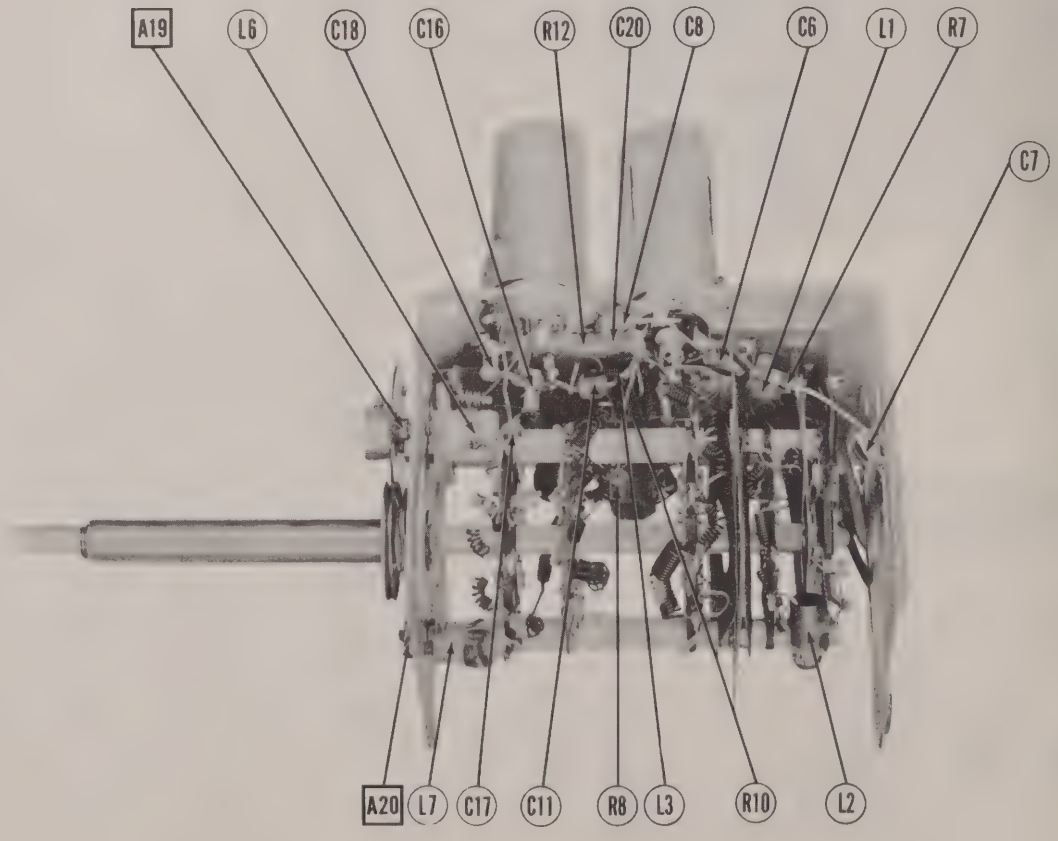
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
LOCAL AND DISTANCE SWITCH IN LOCAL POSITION
▲ MEASURED FROM PIN 8 OF V16
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
LOCAL AND DISTANCE SWITCH IN LOCAL POSITION
† MEASURED FROM PIN 8 OF V25
# MEASURED FROM PIN 3 OF V23
▲ MEASURED FROM PIN 8 OF V16

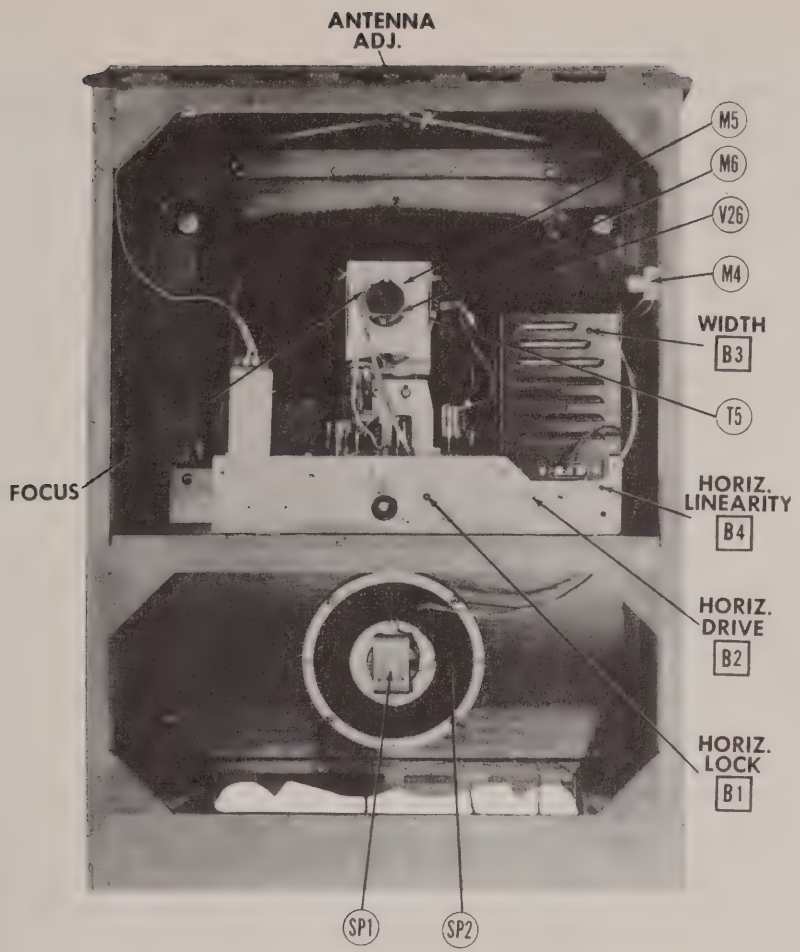
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal lock slug, (B1), until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2) counter-clockwise as far as possible without crowding or bright vertical lines appearing in the picture.

Adjust the width slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

Since the drive trimmer effects both width and horizontal linearity it may be necessary to adjust them alternately for optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove seven wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove interlock switching arrangement.
5. Disconnect speaker.
6. Disconnect speaker.
7. Disconnect picture tube socket.
8. Remove high voltage lead.
9. Remove six 3/8" hex head bolts from chassis. Remove chassis.
10. Remove four 5/16" hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier		6AK5	7BD	
V2	Converter		6J6	7BF	
V3	1st. Video IF Amp.		6CB6	7CM	
V4	2nd. Video IF Amp.		6CB6	7CM	
V5	3rd. Video IF Amp.		6CB6	7CM	
V6	4th. Video IF Amp.		6BA6	7BK	
V7	Video Detector-Sync. Clamper		6AL5	6BT	
V8	Video Amplifierr		6AC7	8N	
V9	AGC Amplifier		6AU6	7BK	
V10	AGC Cathode follower		6AV6	7BT	
V11	1st. Sound IF Amp.		6AU6	7BK	
V12	2nd. Sound IF Amp.		6AU6	7BK	
V13	Limiter		6AU6	7BK	
V14	Discriminator		6AL5	6BT	
V15	AF Amplifier -AGC Clamp		6AV6	7BT	
V16	Audio Output		6Y6G	7AC	
V17	Sync. Amplifier-Sync. Separator		12AU7	9A	
V18	Phase Inverter-Vert. Oscillator		6SN7GT	8BD	
V19	Vert. Output		6S4	9AC	
V20	Horizontal Phase Detector		6AL5	6BT	
V21	Horiz. Mult.		6SN7GT	8BD	
V22	Horiz. Output		6CD6G	5BT	
V23	Damper		6W4GT	4CG	
V24	HV Rectifier		1B3GT	3C	
V25	LV Rectifier		5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: ARVIN PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V26A	20CP4	20CP4	20CP4	12D	
B	20DP4A	20DP4A		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	E22422-7	AFH3-43		UPT44145		TVL-3785	▲ Filter
B	40	450		PRS450/10		BR1235A		TVA-1604	■ Filter
C	10	450							▲ Audio Output Screen
D	10	350							■ Decoupling
C2A	60	450	E22422-9			UPT42145-V10		TVL-3790	▲ Decoupling
B	40	250				BR4025A		TVA-1310	■ Audio Output Cathode
C	10	150							▲ Video Amp. Screen
D	80	50							Vert. Output Cathode
C3A	40	450	E22422-8	AFH3-41		UPT41145		TVL-3785	▲ Decoupling
B	10	450		PRS250/40		BR4025A		TVA-1705	■ Audio Output Plate
C	10	450							▲ Decoupling
D	40	250							Decoupling
C4	3000	15	E22422-12	AFH1-04		UP3M-15		R1115	Bias Filter
C5	5	150	A23025-2	PRS150/4		BR415		TVA-1402	Horiz. Output Cathode
C6	15			SI15	D6-150		GP1K-150	5GA-Q15	RF Coupling
C7	1000		A23078	BPD-001	DD-102		801-001	5HK-D1	AGC Filter
C8	1000		A23078	BPD-001	DD-102		801-001	5HK-D1	RF Amp. Screen
C9	470			SI470	D6-471				RF Amp. Plate
C10	1000		A23078	BPD-001	DD-102		801-001	5HK-D1	RF Amp. Fil.
C11	†				TCZ-1		NP0K-010		RF Coupling
C12	.5				TCZ-.5		NP0K-R50		RF Coupling
C13	1.8						NP0K-1R8		RF Coupling *
C14	25			SI25	D6-250		GP1K-250	5GA-Q25	RF Coupling
C15	.68				TCZ-.68		NP0K-R68		Osc. Coupling
C16	10	*		SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Osc. Grid Cap.
C17	.68				TCZ-.68		NP0K-R68		Fixed Trimmer
C18	1.5						N330K-1R5		Osc. Feedback
C19	15			SI15	D6-150		GP1K-150	5GA-Q15	Fixed Trimmer
C20	1000		A23078	BPD-001	DD-102		801-001	5HK-D1	Conv. Fil., †
C21	340	500		1468-00025		5W5T25	GP2K-471	1FM-315	Mixer Plate Dec.
C22	5000		A21674	BPD-005	DD-502		811-005	5HK-D5	RF Bypass
C23	5000		A21674	BPD-005	DD-502		811-005	5HK-D5	AGC Filter
C24	1000		A23078	BPD-001	DD-102		801-001	5HK-D1	RF Bypass
C25	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	AGC Filter
C26	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	IF Coupling
C27	36						N330K-360		Fixed Trimmer
C28	5		C20205-9				N220K-050		Fixed Trimmer
C29	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	AGC Filter
C30	610		C20351-1	SI680	D6-681	1W5T7	GP2K-681	5GA-T68	1st. Video IF Dec.
C31	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	1st. Video IF Fil.
C32	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	RF Bypass
C33	47						N330K-390		Fixed Trimmer
C34	47		C20205-19	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	IF Coupling
C35	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	AGC Filter
C36	610		C20351-1	SI680	D6-681	1W5T7	GP2K-681	5GA-T68	2nd. Video IF Dec.
C37	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	2nd. Video IF Fil.
C38	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	RF Bypass
C39	39						N330K-390		Fixed Trimmer
C40	47		C20205-19	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	IF Coupling
C41	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	AGC Filter
C42	610		C20351-1	SI680	D6-681	1W5T7	GP2K-681	5GA-T68	3rd. Video IF Dec.
C43	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	3rd. Video IF Fil.
C44	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	RF Bypass
C45	47		C20205-19	SI470	D6-47	5W5Q5	GP1K-470	5GA-Q47	IF Coupling
C46	2.2		C20205-7				N220K-2R2		IF Coupling
C47	36						N330K-360		Fixed Trimmer
C48	610		C20351-1	SI680	D6-681	1W5T7	GP2K-681	5GA-T68	4th. Video IF Dec.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C49	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	4th. Video IFCathode
C50	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	4th. Video IF Fil.
C51	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	RF Bypass
C52	68		C20205-11	SI68	D6-680	5W5Q7	GP1K-680	5GA-Q68	IF Coupling
C53	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	Video Det. Fil.
C54	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	RF Bypass
C55	5		C20205-9				N220K-050		Video Det. Filter
C56	120						N330-333-121		Fixed Trimmer
C57	.02	200	C20291-223	P488-02		DF-203	PTE4S2	2TM-S2	Video Amp. Cathode
C58	.22	400	C20292-224	P488-22			GT4P25	4TM-P22	Video Coupling
C59	.047	400	C20292-473	P488-047	DF-502		PTE4S5	4TM-S47	Picture Tube Grid
C60	.001	600	C20295-102	P688-001	D6-102		PTE6D1	GP2L-102	6TM-D1 Horiz. Feedback
C61	.0047	600	C20295-472	P688-0047	D6-472		PTE6D5	GP2-333-472	6TM-D47 AGC Filter
C62	.47	200	C20291-474	P288-47			GT2P5		2TM-P47 AGC Filter
C63	.47	200	C20291-474	P288-47			GT2P5		2TM-P47 AGC Filter
C64	.1	200	C20291-104	P288-1	DF-104		PTE4P1		2TM-P1 AGC Coupling
C65	47		C20205-19				N220L-470		Sound IF Coupling
C66	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Dec.
C67	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Cathode
C68	47		C20205-19				N220L-470		Sound IF Coupling
C69	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Dec.
C70	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Cathode
C71	47		C20205-19	SI47	D6-470	5W5Q5	GP1K-470	1FM-45	Limiter Grid Filter
C72	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Limiter Decoupling
C73	47		C20205-19	SI47	D6-470	5W5Q5	GP1K-470	1FM-45	RF Bypass
C74	.001	600	C20295-102	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	De-emphasis
C75	.01	600	C20295-103	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C76	.0022	600	C20295-222	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D2	Tone Comp.
C77	.0033	300	C20295-332	P688-0033	D6-332	PTE6D3	GP2-333-302	6TM-D3	Tone Comp.
C78	.0033	600	C20295-332	P688-0033	D6-332	PTE6D3	GP2-333-302	6TM-D3	Audio Coupling
C79	270	500	C20290-271	1468-0003	D6-301	5W5T3	GP2K-301	MS-33	AF Amp. Plate
C80	.01	1000	C20296-103	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C81	.1	400	C20292-104	P488-1	DF-104	PTE4P1		4TM-P1	Audio Output Grid
C82	.01	1000	C20296-103	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C83	.47	200	C20291-474	P288-47		GT2P5		2TM-P47	Sync. Amp. Cathode
C84	.047	600	C20295-473	P688-047	DF-503	PTE6S5		6TM-S47	Sync. Coupling
C85	120	500	C30065-121	1468-00015	D6-121	5W5T15	GP2K-121	1FM-315	Sync. Coupling
C86A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		◆C24186	P688-005	◆PC-100	PTE6D5	GP2-333-502	◆101C1	▲ Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C87	.0047	600	C20324-472	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Osc. Grid
C88	.0015	600	C20295-152	P688-0015	D6-152		GP2L-152	6TM-D15	Fixed Trimmer
C89	.047	600	C20295-473	P688-047	DF-503	PTE6S5		6TM-S47	Vert. Discharge
C90	.1	600	C20295-104	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C91	1000	500	C24612-102	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Sync. Coupling
C92	1000	500	C24612-102	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Sync. Coupling
C93	.01	600	C20295-103	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Voltage Divider
C94	.01	600	C20295-103	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	AFC Filter
C95	.047	200	C20291-473	P288-47	DF-503	PTE4S5		2TM-S47	AFC Filter
C96	100	500	C20290-101	1168-0001	D6-101	5W5T1	GP1K-101	1FM-31	Horiz. Feedback
C97	3900	500	C20374-392	1464-004		1DR5D4			Fixed Trimmer
C98	330	500	C20290-331	1468-00035					Horiz. MV Feedback
C99	47	500	C20290-470	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	Horiz. MV Grid
C100	3.0	500	C20290-331	1468-00035					Horiz. Discharge
C101	270	500	C20290-271	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Horiz. Sweep Coupling
C102	.047	600	C20295-473	P688-047	DF-503	PTE6S5		6TM-S47	Horiz. Output Screen
C103	.22	400	C20294-224	P488-22		GT4P2		4TM-P22	Horiz. Sweep Coupling
C104	.047	200	C20291-473	P288-047	DF-503	PTE4S5		2TM-S47	Damper Filter
C105	.022	400	C20291-223	P488-022	DF-203	PTE4S2		4TM-S22	Damper Filter
C106	.25	600	C20295-224	084-25		GP6P25		6TM-P25	Damper Filter
C107	500	20000	A22496	HV20-A	TV1-502				HV Filter
C108	.01	600	C20358-103	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C109	.01	600	C20358-103	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter

Not used in all models.
◆ Items C86A, C86B, C86C, R85A, R85B, R85C are combined in one unit.
† Some models use 680MMF, in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	25KΩ	½	E-22464-17		RTV-258	SBBT-668-S	Contrast Control - Front
B	3Meg	½					Volume Control and SW-Rapped at 1Meg-Rear
R2A	1Meg	½	E-22464-22	Q11-137	AG-61-S	AN-69	Vert. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	50KΩ	½	E-22464-23	Q11-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	100KΩ	½	E-22464-18	Q11-128	AG-49-S	AN-40	Brightness Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R4A per instructions
R5	2Meg	½	E-22464-19				Tone Control and Phono SW
R6A	3000Ω	2	E-22464-20		RTV-259		Vert. Linearity Control - Wire Wound - Front
B	2.5Meg	½					Height Control - Rear

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	IDENTIFICATION CODES
R7	4700Ω			BTS-4700	RF Amp. Grid
R8	4700Ω			BTS-4700	Decoupling - See Note 2
R9	10KΩ	20%		BTS-10K	Mixer Grid - See Note 3
R10	220KΩ			BTS-220K	Mixer Grid
R11	4700Ω			BTS-4700	Mixer Grid Coil Shunt - See Note 1
R12	15KΩ	20%			Mixer Plate - See Note 4
R13	15KΩ	20%			Osc. Grid
R14	4700Ω			BTS-4700	Osc. Plate
R15	560KΩ			BTS-560K	AGC Network
R16	3300Ω	20%		BTS-3300	AGC Network
R17	470Ω			BTS-470	Decoupling
R18	1000Ω	20%		BTS-1000	Decoupling
R19	150Ω	20%	C20061-151	BTS-150	Decoupling
R20	3300Ω	20%	C20061-332	BTS-3300	AGC Network
R21	15KΩ		C22381-153		1st. Video IF Amp. Grid
R22	47Ω		C22381-470		1st. Video IF Amp. Cathode
R23	1000Ω	20%	C220061-102	BTS-1000	1st. Video IF Amp. Decoupling

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	IDENTIFICATION CODES
R24	3300Ω	20%	C20061-332	BTS-3300	AGC Network
R25	150Ω	20%	C20061-151	BTS-150	Decoupling
R26	18KΩ	5%	C22382-183		2nd. Video IF Amp. Grid
R27	47Ω		C22381-470		2nd. Video IF Amp. Cathode
R28	1000Ω	20%	C20061-102	BTS-1000	2nd. Video IF Amp. Decoupling
R29	47Ω		C22381-470		3rd. Video IF Amp. Cathode
R30	1000Ω	20%	C20061-102	BTS-1000	3rd. Video IF Amp. Decoupling
R31	150Ω	20%	C20061-151	BTS-150	Decoupling
R32	22KΩ		C22381-223	BTS-22K	Sound Trap Shunt
R33	120Ω		C22381-121	BTS-120	4th. Video IF Amp. Cathode
R34	1000Ω	20%	C20061-102	BTS-1000	4th. Video IF Amp. Cathode
R35	150Ω	20%	C20061-151	BTS-150	Decoupling
R36	4700Ω		C22381-472	BTS-4700	Video Det. Diode Load
R37	68Ω		C22381-680		Video Amp. Cathode
R38	27Ω		C22381-270		Video Amp. Cathode
R39	10KΩ		C22381-103	BTS-10K	Video Amp. Screen
R40	4300Ω	5%	C22383-432		Video Amp. Plate
R41	10KΩ	20%	C20061-103	BTS-10K	Isolation
R42	15KΩ		C22381-153	BTS-15K	Voltage Divider
R43	47KΩ	20%	C20061-473	BTS-47K	AGC Amp. Grid
R44	10KΩ	20%	C20061-103	BTS-10K	AGC Amp. Screen
R45	47KΩ		C22381-473	BTS-47K	AGC Network
R46	47KΩ		C22381-473	BTS-47K	AGC Network
R47	2.2Meg		C22381-225	BTS-2.2Meg	Voltage Divider
R48	120KΩ		C22381-124	BTS-120K	AGC Cathode Follower Grid
R49	12KΩ	5%	C22382-123	BTS-12K-5%	AGC Cathode Follower Cathode
R50	22KΩ		C22381-223	BTS-22K	AGC Network
R51	6800Ω		C22381-682	BTS-6800	Isolation
R52	100KΩ	20%	C20061-104	BTS-100K	1st. Sound IF Amp. Grid
R53	68Ω		C22381-680		1st. Sound IF Amp. Cathode
R54	1000Ω		C22381-102	BTS-1000	1st. Sound IF Amp. Decoupling
R55	5600Ω		C22381-562	BTS-5600	2nd. Sound IF Transformer Shunt
R56	470KΩ	20%	C20061-474	BTS-470K	2nd. Sound IF Amp. Grid
R57	150Ω	20%	C20061-151	BTS-150	2nd. Sound IF Amp. Cathode
R58	1000Ω	20%	C20061-102	BTS-1000	2nd. Sound IF Amp. Decoupling
R59	22KΩ		C22381-223	BTS-22K	Limiter Grid
Rs0	47KΩ		C22381-473	BTS-47K	Limiter Decoupling
R61	10KΩ		C22381-103	BTS-10K	Voltage Divider
R62	5.1Ω		C20308-51	BW-½-5.1	Ratio Det. Diode Filament - Wire Wound
R63	100KΩ		C22381-104	BTS-100K	Ratio Det. Diode Load
R64	100KΩ		C22381-104	BTS-100K	Ratio Det. Diode Load
R65	27KΩ		C22381-273	BTS-27K	De-emphasis
R66	100KΩ		C22381-104	BTS-100K	Tone Compensation
R67	220KΩ		C22381-224	BTS-220K	Tone Compensation
R68	10Meg	20%	C22061-106	BTS-10Meg	AF Amp. Grid
R69	220KΩ		C22381-224	BTS-220K	AF Amp. Plate
R70	100KΩ		C22381-104	BTS-100K	Output Grid
R71	180KΩ	5%	C22382-184	BTS-180K-5%	Output Grid
R72	2700Ω	2	C20302-272	BTB-2700	Output Screen
R73	240KΩ	5%	C22382-244		Bias Network
R74	220Ω	2	C20302-221	BW-2-220	Decoupling
R75	220Ω	2	C20302-221	BW-2-220	Decoupling
R76	680Ω		C22381-681	BTS-680	Decoupling
R77	270KΩ		C22381 274	BTS-270K	Sync. Amp. Cathode
R78	18KΩ	5%	C22382-183	BTS-18K-5%	Sync. Amp. Plate
R79	22KΩ		C22381-223	BTS-22K	Voltage Divider
R80	2.2Meg		C22381-225	BTS-2.2Meg	Sync. Sep. Grid
R81	22KΩ		C22381 223	BTS-22K	Sync. Sep. Plate
R82	4.7Meg		C22381-475	BTS-4.7Meg	Sync. Phase Inv. Grid
R83	3300Ω		C22381-332	BTS -3300	Sync. Phase Inv. Cathode
R84	3300Ω		C22381-332	BTS-3300	Sync. Phase Inv. Plate
R85A	22KΩ		C24166 ◆	BTS-22K	Integrator
B	8200Ω			BTS-8200	Integrator
C	8200Ω			BTS-8200	Integrator
R86	22KΩ		C22381-223	BTS-22K	Integrator
R87	470KΩ		C22381-474	BTS-470K	Vert. Osc. Transformer Shunt
R88	1.5Meg		C22381-155	BTS-1.5Meg	Vert. Osc. Grid - See Note 5
R89	1.5Meg		C22381-155	BTS-1.5Meg	Vert. Osc. Plate - See Note 5
R90	100KΩ		C22381-104	BTS-100K	Voltage Divider
R91	10Meg		C22381-106	BTS-10Meg	Voltage Divider
R92	6800Ω		C22381-682	BTS-6800	Vert. Peaking
R93	2.2Meg		C22381-225	BTS-2.2Meg	Vert. Output Grid
R94	470Ω	20%	C20103-471	BTA-470	Vert. Output Cathode
R95	1800Ω	2	C20302-182	BTB-1800	Decoupling
R96	100KΩ	5%	C22382-104	BTS-100K-5%	Horiz. Phase Det. Diode Load
R97	100KΩ	5%	C22382-104	BTS-100K-5%	Horiz. Phase Det. Diode Load
R98	4.7Meg		C22381-475	BTS-4.7Meg	Horiz. Phase Det. Diode Load
R99	15KΩ	2	C20302-153	BTB-15K	Horiz. Feedback
R100	470KΩ		C22381-474	BTS-470K	Horiz. AFC Filter
R101	1200Ω		C22381-122	BTS-1200	Horiz. MV Cathode
R102	8200Ω		C22381-822	BTS-8200	Horiz. MV Plate
R103	91KΩ	5%	C22382-913		Horiz. MV Grid
R104	120KΩ		C22381-124	BTS-120K	Horiz. MV Plate
R105	22KΩ		C22381-223	BTS-22K	Horiz. Hold Control Shunt
R106	8200Ω		C22381-822	BTS-8200	Horiz. Peaking
R107	47Ω	20%	C20061-470		Parasitic Suppressor
R108	470KΩ		C22381-474	BTS-470K	Horiz. Output Grid
R109	150Ω	10	C23970-12	1 3/4A-150	Horiz. Output Cathode - Wire Wound
R110	8000Ω	10	C23970-5	1 3/4A-8000	Horiz. Output Screen - Wire Wound
R111	500Ω	10	C23970-13	1 3/4A-500	Decoupling - Wire Wound
R112	3.3Ω		C20308-33	BW-½-3.3	HV Rectifier Filament - Wire Wound
R113	470KΩ	20%	C20103-474		HV Filter
R114	50Ω	5	C23970-6	1 3/4A-50	Bias Network - Wire Wound
R115	220KΩ	20%	C20061-224	BTS-220K	Isolation
R116	220KΩ		C22381-224	BTS-220K	Picture Tube Grid

◆ Items R85A, R85B, R85C, C86A, C86B, and C86C are combined into one unit

Note 1 Not used in all models.
Note 2 Some models use 2200Ω resistor in this application.
Note 3 Some models use 4700Ω resistor in this application.
Note 4 Some models use 12KΩ resistor in this application.
Note 5 Some models use series resistors in this application to obtain desired value.

ARVIN MODELS 5204CM, 5206CB (Ch. TE300)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.2A	640VCT .250ADC	5VAC @ 3A	6.3VAC @ 9.5A 6.3VAC @ 1.55A 6.3VAC @ 1.2A	E24654		P3059 and P3074	

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	190Ω	1050Ω	C-22446-1	A-8122	A-4000 ①	TBO-3 ①	Vert. Block Osc. Trans.
T3	400Ω	18.5Ω	E-24681				Horiz. Output Trans.
	Tap 33Ω	Tap 14Ω					
		SEC. 2					
		0Ω					
T4	1.25KΩ	17.5Ω	C-23657	A-8123	A-3035	TSO-5 ①	Vert. Output Trans.
T5A	22Ω		D-24807				Horiz. Deflection Coils
B	50Ω						Vert. Deflection Coils

① Drill one new mounting hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	REPLACEMENT DATA ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	2.3KΩ	3.5Ω	198Ω	.7Ω	C-23490-1	A-3825 ①	A-3018 ①	RO-2 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	V. C. IMP.	REPLACEMENT DATA ARVIN PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	77Ω	3.6Ω	E23638		10E77S	
	CONE DIA.	V. C. DIA.				
SP2	9 3/8"	1"				

COILS (RF-IF)

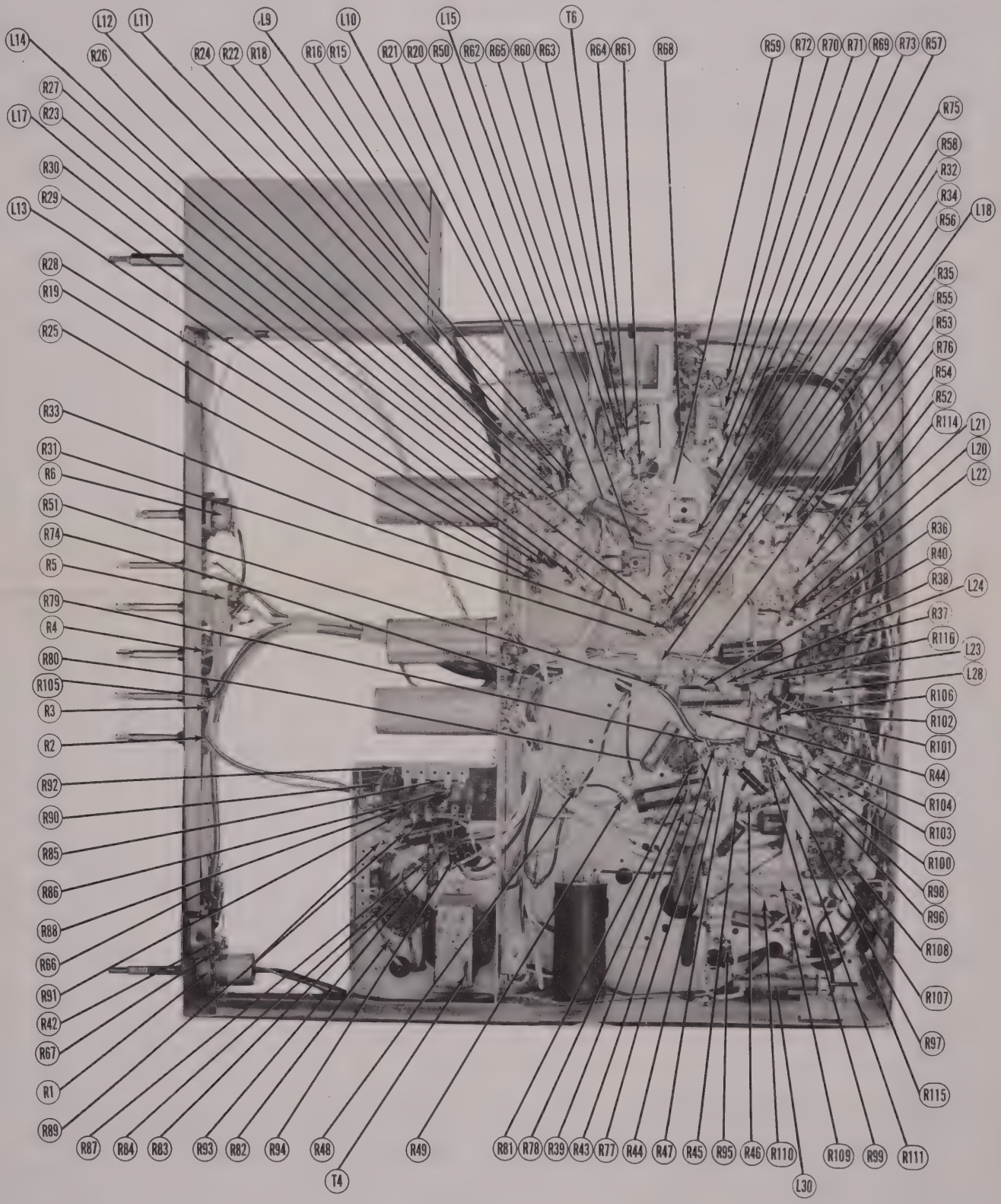
ITEM No.	USE	DC RES. PRI.	SEC.	REPLACEMENT DATA ARVIN PART No.	IRC PART No.	NOTES
L1	Ant. Coil	0Ω	0Ω			
L2	Ant. Coil	0Ω	0Ω			
L3	Fil. Choke	0Ω				
L4	RF Coil	0Ω				
L5	Mixer Grid Coil	0Ω				
L6	Osc. Coil	0Ω				
L7	Osc. Coil	0Ω				
L8	Conv. Plate Coil	.1Ω				
L9	Fil. Choke	4Ω			CL-1	5.6 Microhenries
L10	1st. Video IF	.1Ω		C24988		Includes Trap
L11	Fil. Choke	0Ω		A23095		
L12	2nd. Video IF	.1Ω		C23443		Includes Trap
L13	3rd. Video IF	.1Ω		C23444		Includes Trap
L14	Grid Choke	1.6Ω		D22500-19		Wound on 18KΩ resistor (20 Microhenries)
L15	Fil. Choke	0Ω		A23095		
L16	4th. Video IF	.1Ω		C23445		Includes Trap
L17	Grid Choke	1.6Ω		D22500-19		Wound on 18KΩ resistor (20 Microhenries)
L18	Sound Trap	.2Ω	0Ω			
L19	5th. Video IF	.1Ω		C23446		Includes Trap
L20	Cathode Choke	1.8Ω		C22500-8		Wound on 12KΩ resistor (20 Microhenries)
L21	Peaking	7.5Ω		D22500-4		90 Microhenries wound on 33KΩ resistor
L22	4.5MC Trap	.3Ω		C23670		
L23	Peaking	6.2Ω		D22500-17		180 Microhenries wound 47KΩ resistor
L24	Peaking	8.1Ω		C22500-18		300 Microhenries
L25	1st. Sound IF	1.5Ω		C23448		
L26	2nd. Sound IF	2Ω	2Ω	C23447		
L27	Discr. Trans.	1.6Ω	1.5Ω	C23893		Tap 1.7Ω
L28	Horiz. Osc.	50Ω		C23449		
L29	Width Coil	32Ω	35Ω	C24655		
L30	Horiz. Lin.	10Ω		C24754		Tap 4.8Ω

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ARVIN PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	REMARKS
M1	3AG Pigtail	.250	A22493		318.250		

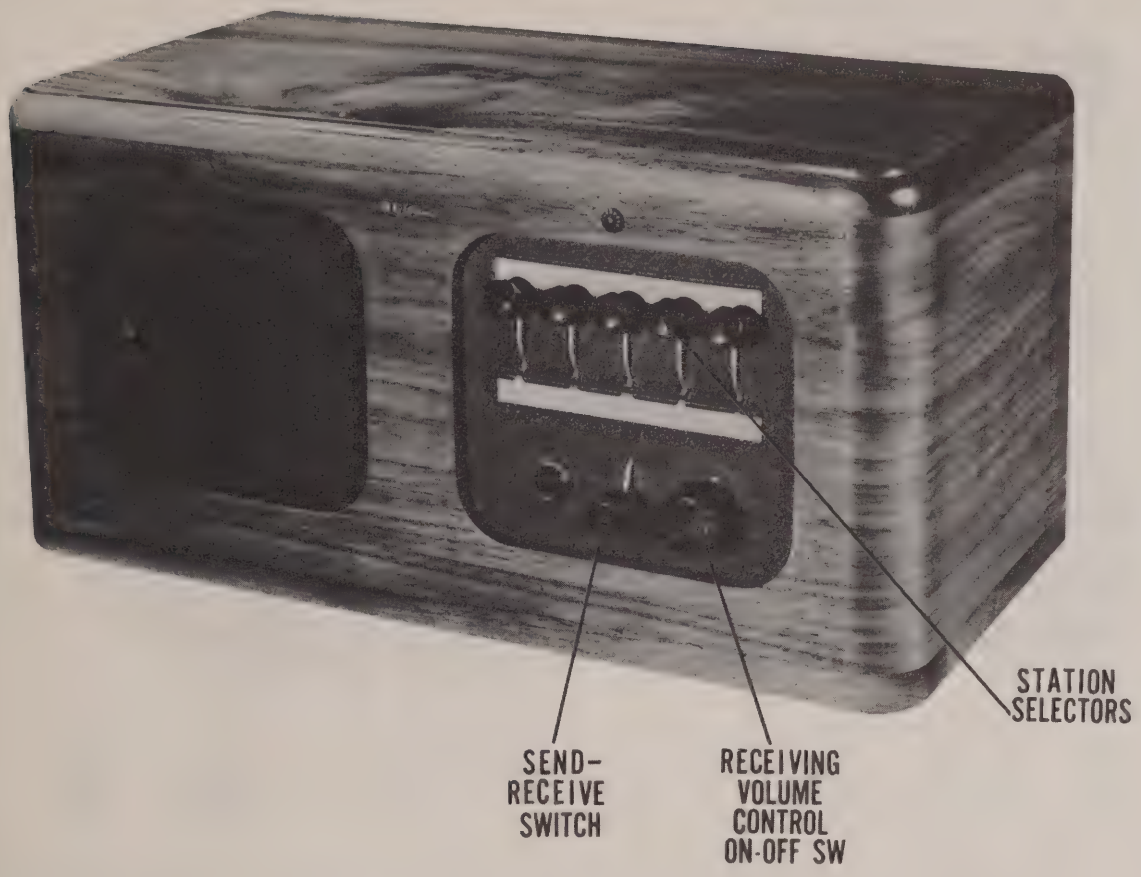
MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M2	RF Tuner	E24718-1	
M3	Switch	C23685-1	Local and Distance
M4	Switch	A22868	Interlock
M5	Focus Magnet	C23910-1	
M6	Ion Trap	C24119-1	
B2	Trimmer	A24528	40-270MMF. (Horiz. Drive)
	Knob	D23602-1	Channel Selector
	Knob	D23604	Contrast
	Knob	D23605	Fine Tuning
	Knob	D23603-1	Off/On Volume



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

BELL SOUND
MODEL 352



BELL SOUND
MODEL 352

TRADE NAME	Bell Sound, Model 352 (Belfone)
MANUFACTURER	Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio
TYPE SET	AC Operated Inter-communication System
TUBES (THREE)	Types 6SJ7 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .475 Amp. at 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		BELL SOUND PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	6SJ7	6SJ7	8N	
V2	Power Output	6V6GT	6V6GT	7AC	
V3	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	BELL SOUND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	10	450		AFH2-47		UP1145		TVL-2750	■ Filter
B	10	450							▲ Filter
C2	10	25		PRS25/10		BR102A		TVA-1204	Output Cathode
C3	10	25		PRS25/10		BR102A		TVA-1204	AF Amp. Cathode
C4	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	AF Amp. Screen
C5	.006	600		P688-006		PTE6D6	GP2-333-602	6TM-D6	Audio Coupling †
C6	.006	600		P688-006		PTE6D6	GP2-333-602	6TM-D6	Output Plate
C7	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Line Filter ‡

† Some models use .001MFD. in this application.
‡ Some models use .03MFD. in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	BELL SOUND PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	100KΩ	½		Q13-128	AG-51-S	N-117	Volume Control Master
B	Shaft			Not req.	RS-3	Not req.	Attach to R1A per instructions
R2A	10KΩ	½		Q11-116	M-27-S	N-107	Volume Control Receiver
B	Shaft			Not req.	Not req.	Not req.	Attach to R2A per instructions
C	Switch			76-1	SWA	K-155	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BELL SOUND PART No.	IRC PART No.	
R3	3000Ω	1		BTA-2700	AF Amp. Cathode
R4	100KΩ	2		BTB-100K	AF Amp. Screen
R5	10KΩ	½		BTS-10K	Voltage Divider
R6	500KΩ	½		BTS-470K	AF Amp. Plate - See Note 1
R7	400KΩ	½		BTS-390K	Output Grid
R8	400Ω	1		BTA-390	Output Cathode
R9	2Meg	½		BTS-2.2Meg	Feedback Net.

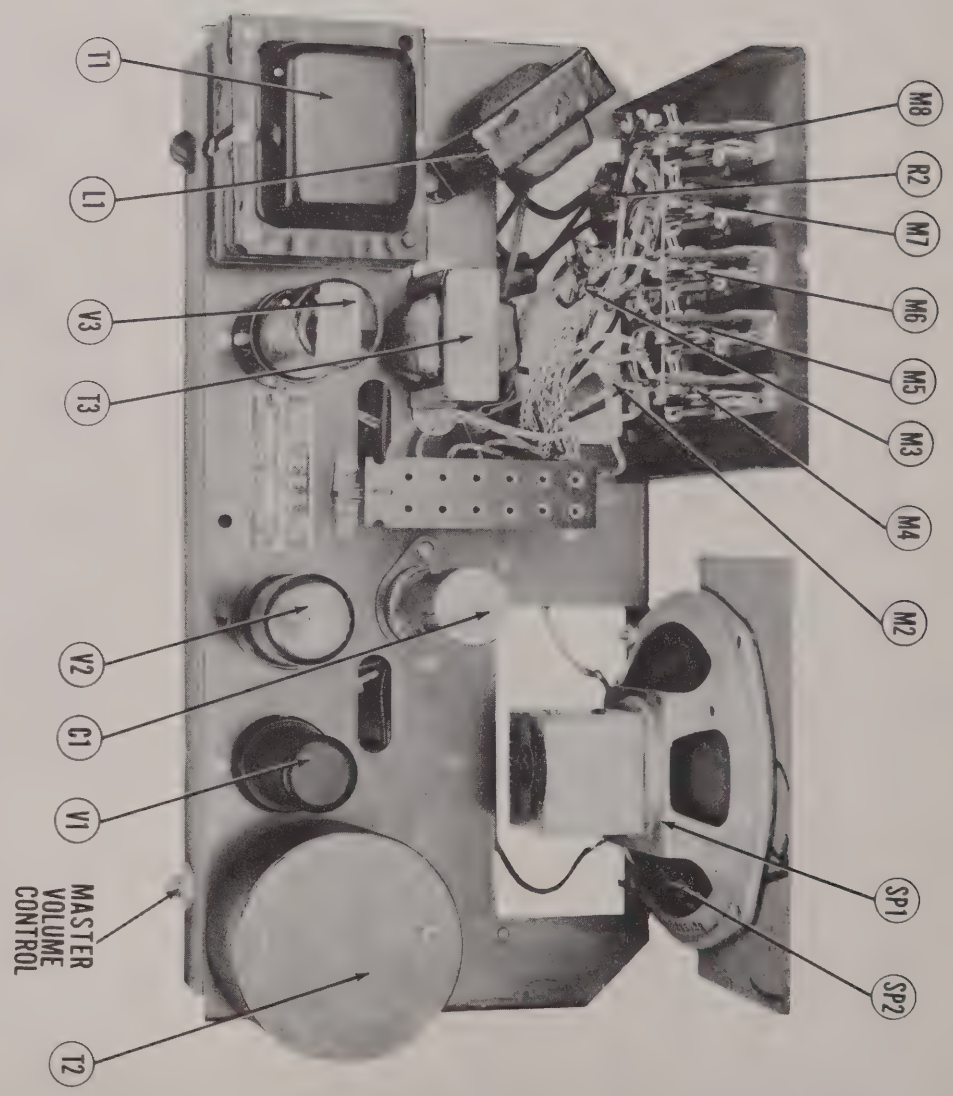
Note 1 Some models use 250KΩ in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BELL SOUND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⓐ .475A	600VCT .060ADC	5VAC ⓐ 2A	6.3VAC ⓐ 1A		PM-8407 ②	P-3052 ②	PH-70 ②

② Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (INPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELL SOUND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2			5Ω	1.3KΩ	B-20072				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELL SOUND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T3	3KΩ	3.1Ω	750Ω	.6Ω	B-10640	A-3849 ①	A-3019 ①	RO-9 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BELL SOUND PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST113 Model P4-X	4A1	
SP1	PM	3.1Ω				
	CONE DIA.	V. C. DIA.				
SP2	4 5/8"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∽)	Bell Sound PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.060A	470Ω	13 Henries	B20058	C-1708 ①	C-2990		① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			BELL SOUND PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	2A			312002	357001	

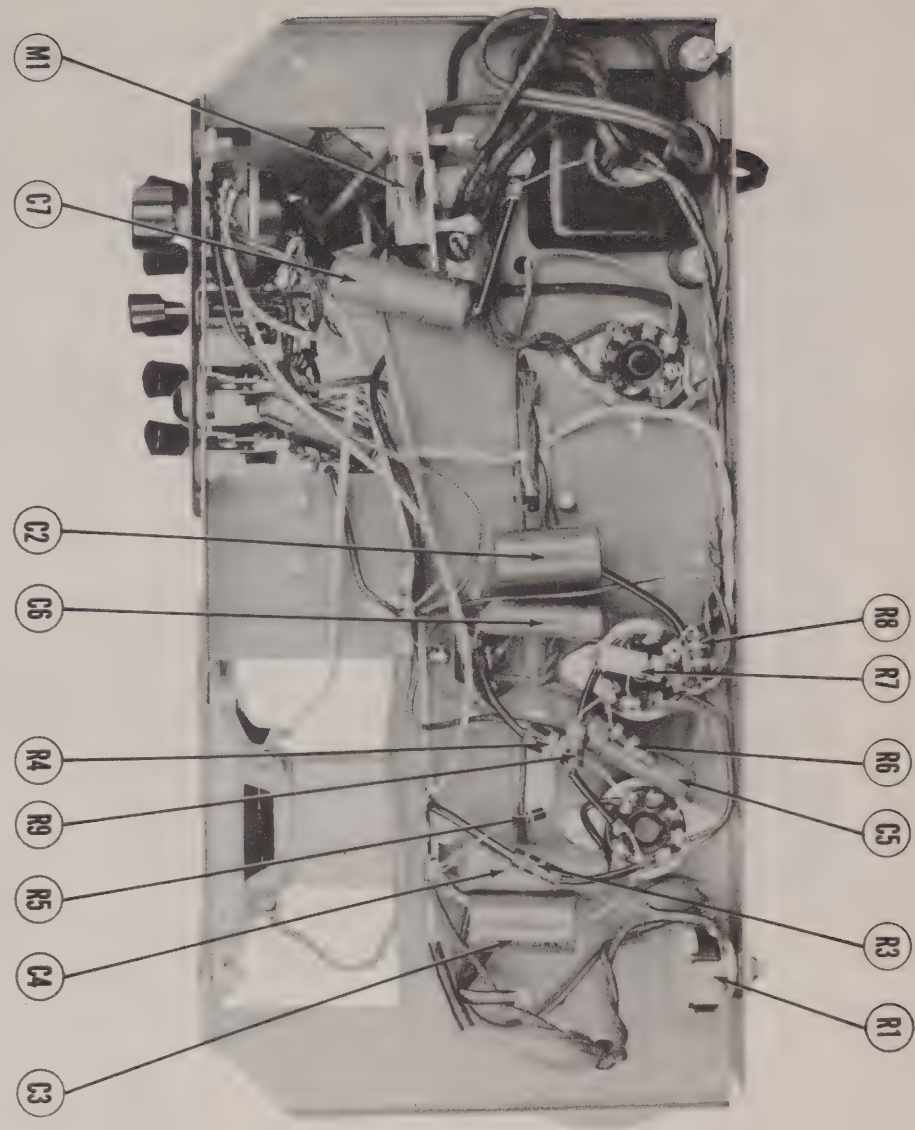
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					BELL SOUND PART No.		
M2	Bayonet	6-8	.25	Blue			Type # 44

MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M3	Switch		Send-Receive
M4	Switch		Station Selector (1 and 6)
M5	Switch		Station Selector (2 and 7)
M6	Switch		Station Selector (3 and 8)
M7	Switch		Station Selector (4 and 9)
M8	Switch		Station Selector (5 and 10)

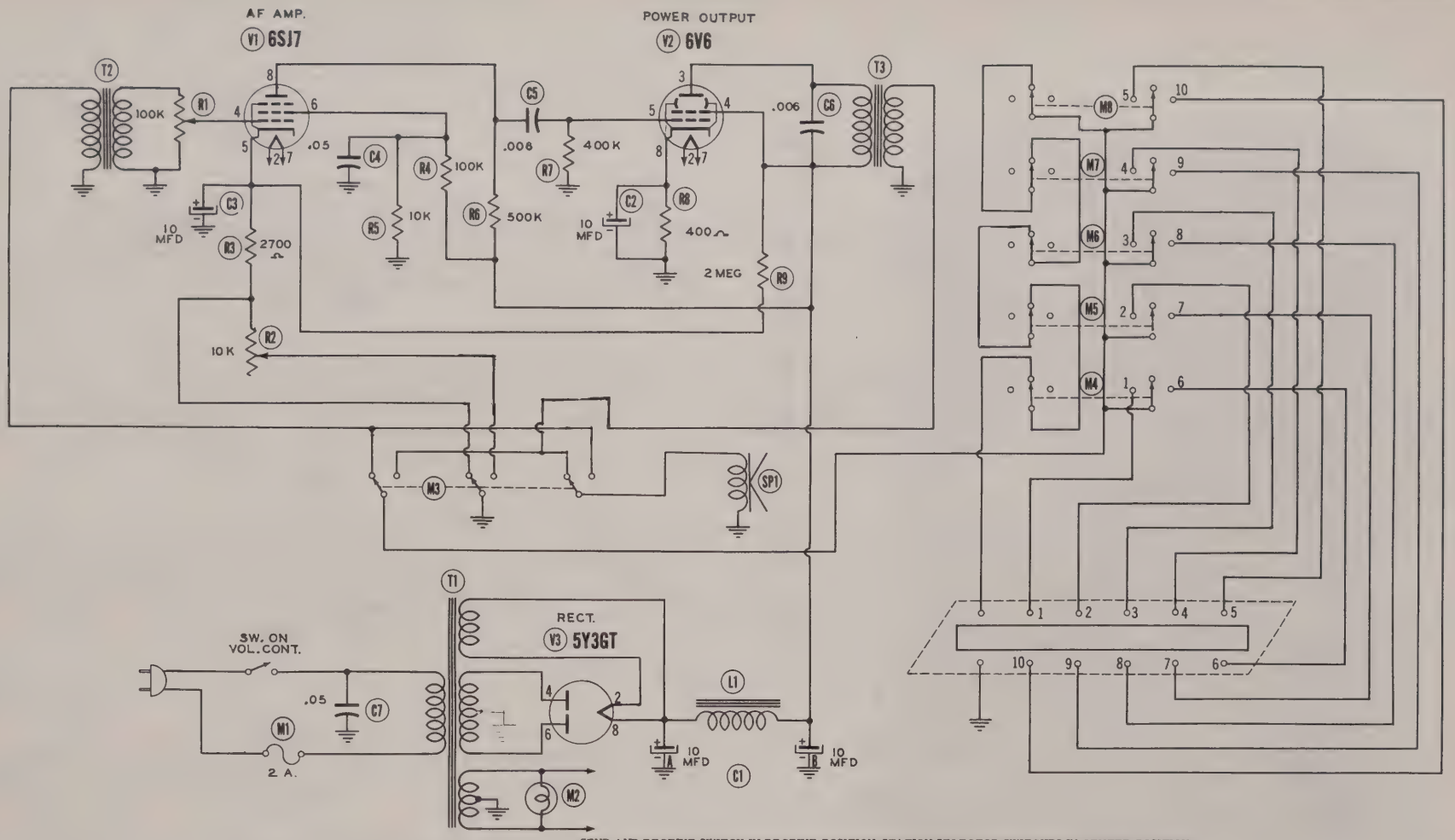
CHASSIS—BOTTOM VIEW



SET 149 FOLDER 4

BELL SOUND MODEL 352

BELL SOUND MODEL 352



SEND AND RECEIVE SWITCH IN RECEIVE POSITION-STATION SELECTOR SWITCHES IN CENTER POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0V	▲0V	2.7VDC	0V	2.7VDC	31VDC	▲6.3VAC	255VDC
V 2	6V6GT	0V	▲0V	285VDC	310VDC	0V	285VDC	▲6.3VAC	19VDC
V 3	5Y3GT	0V	330VDC	0V	310VAC	0V	310VAC	0V	330VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	▲0Ω	13KΩ	0Ω 20KΩ	13KΩ	†70KΩ	▲.1Ω	†500KΩ
V 2	6V6GT	0Ω	▲0Ω	†1.2KΩ	†470Ω	400KΩ	†1.2KΩ	▲.1Ω	400Ω
V 3	5Y3GT	Inf.	80KΩ	Inf.	400Ω	Inf.	390Ω	Inf.	80KΩ

† MEASURED FROM PIN 8 OF V3
▲ MEASURED FROM PIN 2 OF V2

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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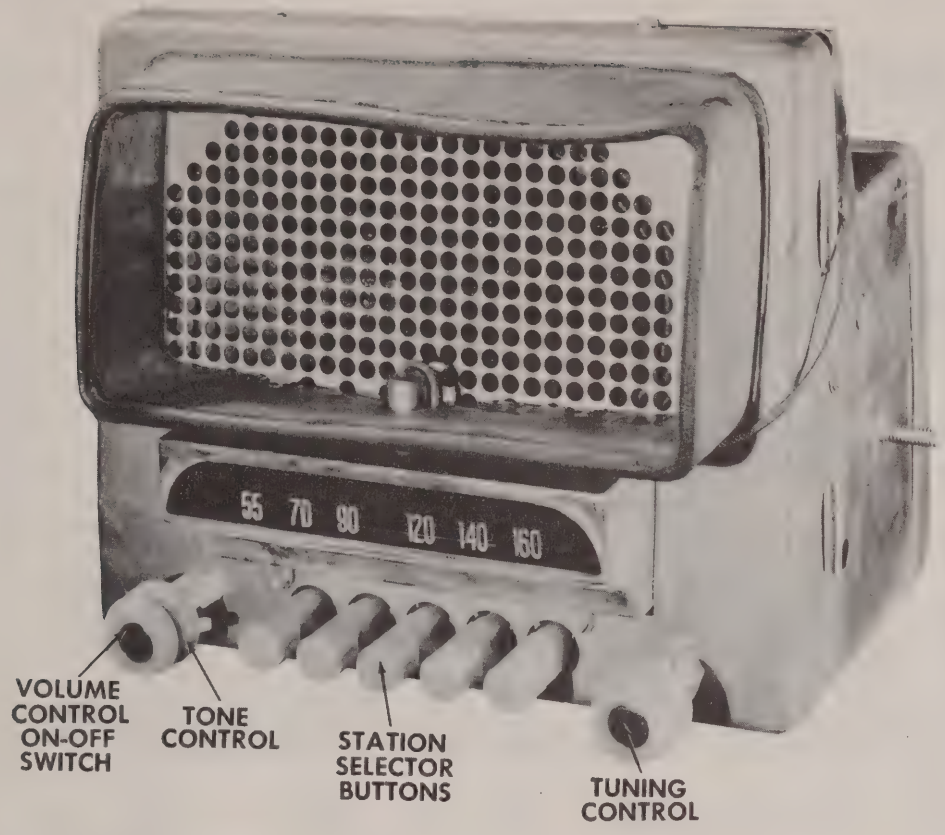
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CHEVROLET
MODEL 986515



CHEVROLET
MODEL 986515

TRADE NAME	Chevrolet, Model 986515
SUPPLIER	Chevrolet Motor Div. General Motors Corp., Detroit 2, Michigan
TYPE SET	Battery Operated Custom-Built 1951 Chevrolet Auto Radio, Superheterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AV6 Det.-AVC-AF, 6V6GT Power Output, 0Z4 Rectifier
POWER SUPPLY	6 volt storage battery — RATING 6 amp. @ 6.3 volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7, (grid) of 6BE6 (V2). Low side to chassis.	260KC (400~Mod.)	Tuning cores fully out.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	68MMF	High side thru 68MMF to antenna socket. Low side to chassis.	1615KC	Tuning cores fully out. Check to see that the oscillator core (L5) measures 1 25/32" from bottom end of core to coil mounting strip. (Insert plug in coil to measure)	"	A5, A6, A7	"
3.	"	"	1400KC	Tune for maximum output.	"	A9, A9	Adjust for maximum output. Repeat steps 2 and 3.
4.	"	"	1000KC	1000KC	"		Adjust "pointer adjust screw" until pointer is at 1000 on dial scale.

After set is installed, fully extend the antenna and tune in a weak station between 600KC and 1000KC. Readjust A7 for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		CHEVROLET PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det. -AVC-AF	6AV6	6AV6	7BT	
V5	Power Output	6V6GT	6V6GT	7AC	
V6	Rectifier	0Z4	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CHEVROLET PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	20	400	7260065	AFH3-120		UP2245C		TVL-3678	■ Filter
B	20	400							▲ Filter
C	20	25							Output Cathode
C2	.05	200	G537	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.05	400	G537	P488-05	DF-503	PTE4S5		4TM-S5	Screen Bypass
C4	10	500	G100	1468-00001	D6-100	5W5Q1	GP1K-100	MS-41	RF Coupling
C5	39	500	G390	1469-00004	TCZ-39	5R5Q4	NPOL-390	MS-44	Fixed Trimmer
C6	180		7257424				N150-333-181		Fixed Trimmer
C7	330	500	G331	1468-00035	D6-331		GP2K-331	1FM-335	Audio Coupling
C8	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Tone Comp. †
C9	.0015	200	1218499	P688-0015	D6-152		GP2L-152	6TM-D15	Tone Comp.
C10	.005	600	G531	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C11	.05	400	G537	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C12	.008	800				PTE16D8		MB-D8	Audio Outout Plate ‡
C13	.006	1600	H602	P1688-005		PTE16D6		MB-D6	Buffer Cap.
C14	.5	100		P185-5		GT2P5		68P20	Hash Filter ¶

† Some models use .005MFD in this application (Part No. G531).
‡ Some models use .015MFD in this application (Part No. 1219693).
¶ This item mounted inside power transformer.

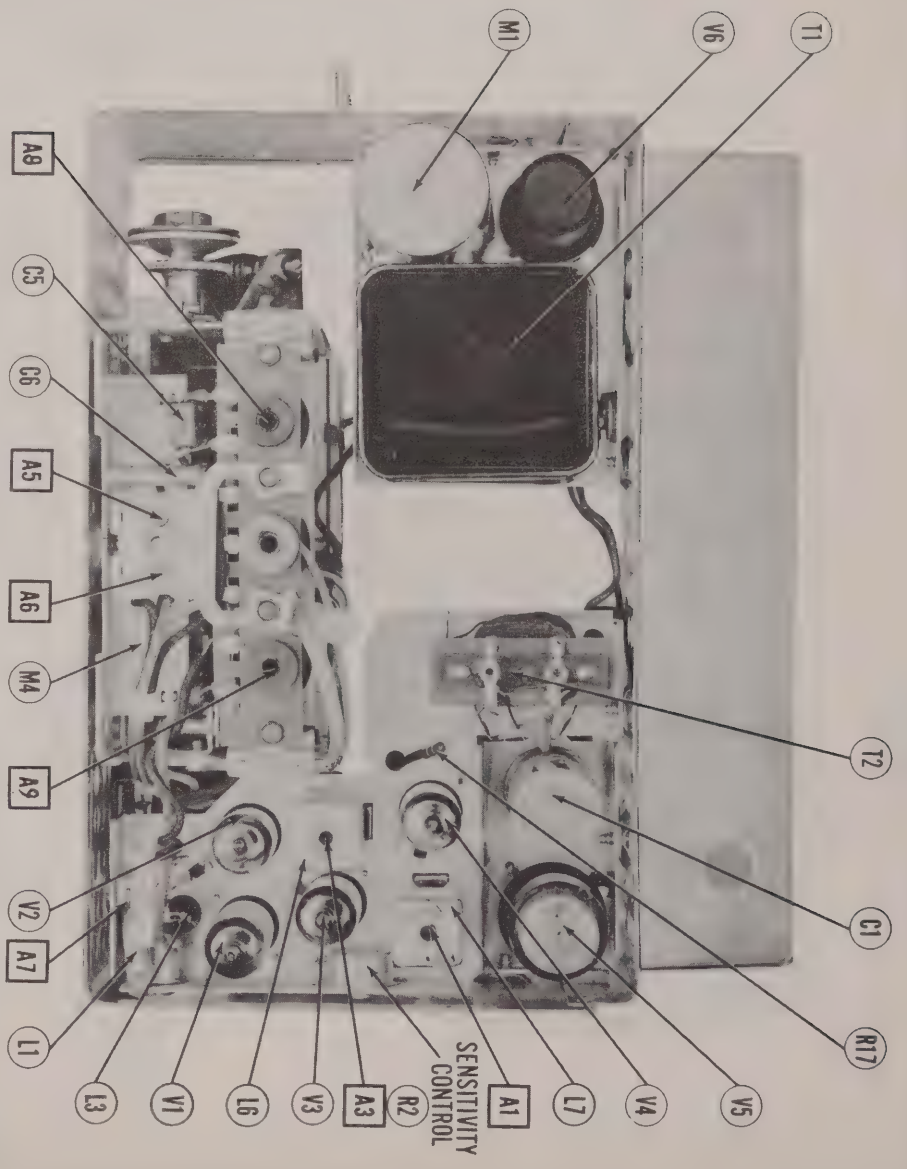
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CHEVROLET PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	Switch		7260084				Tone Switch
B	1Meg	½	Not Req.				Volume control and SW
R2	1000Ω	½	7242204				Sensitivity Control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CHEVROLET PART No.	IRC PART No.	
R3	2.2Meg	½	A225	BTS-2.2Meg	AVC Network
R4	68Ω	½	1215558		RF Amp. Cathode
R5	15KΩ	1	B153	BTA-15K	RF Amp. Plate
R6	15KΩ	2		BTB-15K	RF Amp. Screen See Note 1
R7	330KΩ	½	A334	BTS-330K	AVC Network
R8	22KΩ	½	A223	BTS-22K	Osc. Grid
R9	1Meg	½	A105	BTS-1Meg	AVC Network
R10	47KΩ	½	A473	BTS-47K	Diode Filter
R11	330KΩ	½	A334	BTS-330K	Diode Load
R12	6.8Meg	½	A685	BTS-6.8Meg	AF Amp. Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CHEVROLET PART No.	IRC PART No.	
R13	220KΩ	½	A224	BTS-220K	AF Amp. Plate
R14	180Ω	½	121559	BTS-180	AF Amp. Cathode
R15	220KΩ	½	A224	BTS-220K	Output Grid
R16	330Ω	2	B331	BW-2-330	Output Cathode Wire Wound
R17	2700Ω	½	1213240	BTS-2700	Feedback
R18	1800Ω	2		BW-2-1800*	Filter Wire Wound
R19	220	1	B221	BW-1-220	Hash Suppressor Wire Wound

* If not replaced with IRC 1800Ω 2 watt resistor replace with 2W 5600Ω and 2W2700Ω resistor in parallel.
Note 1 Some models use resistors in parallel to obtain desired value.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CHEVROLET PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 4A	540VCT .058ADC			6060	P-6473 ②	P-4079	

② Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CHEVROLET PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5.8KΩ	4.3Ω	380Ω	.5Ω	7260060	A-3877①	A-2930①	RO-9 ①	① Bend mounting tabs down, file out slots and mount on original brackets.

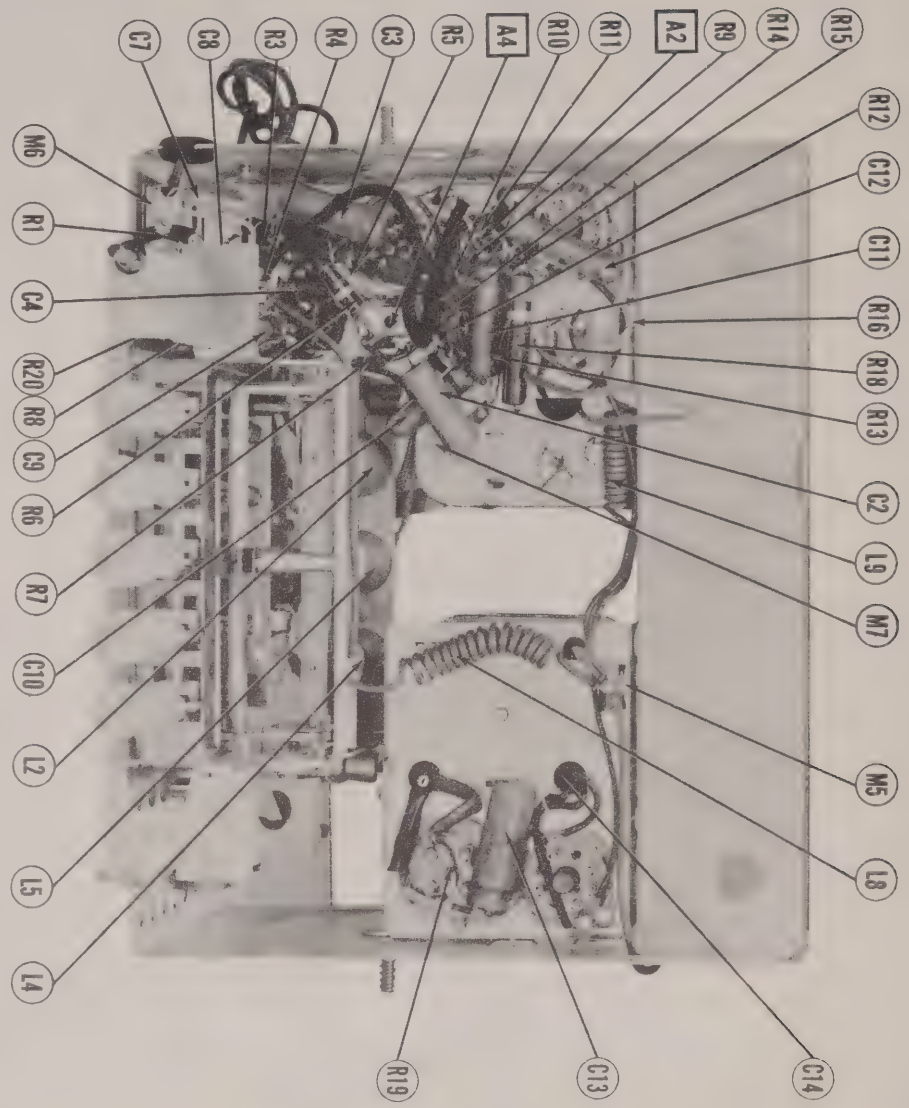
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CHEVROLET PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V.C. IMP.	7260008	ST810 Model P69-V	69A2	
	PM	4.3Ω				
	CONE DIA.	V.C. DIA.				
SP2	6"X9"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	CHEVROLET PART No.	
L1	Ant. Hash Choke	.8Ω		7255738	
L2	Ant. Coil	9Ω		7258914	
L3	Hash Choke	4.5Ω		7240251	
L4	RF Coil	9Ω		7258914	
L5	Osc. Coil	4.4Ω	1.2Ω	7258911	
L6	1st IF	30Ω	30Ω	1218725	
L7	2nd IF	29Ω	29Ω	1218726	
L8	Hash Choke	0Ω		7260090	
L9	Hash Choke	0Ω		7260470	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				CHEVROLET PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	INT	6.3V	115Ω	8542	5300	5300	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			CHEVROLET PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	SFE	14A	147683	1218728	307014		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CHEVROLET PART No.		
M3	Bayonet	7.5	.2	White	125588		Type number 51.

MISCELLANEOUS

ITEM No.	PART NAME	CHEVROLET PART No.	NOTES
M4	Tuning unit		
M5	Spark Plate	1217848	
M6	Spark Plate	1219369	
M7	Spark Plate	1217848	
A5	Dual Trimmer	7242454	Osc. Adj.
A6	Dual Trimmer	7242454	RF Adj.
A7	Trimmer	7260172	Ant. Adj.

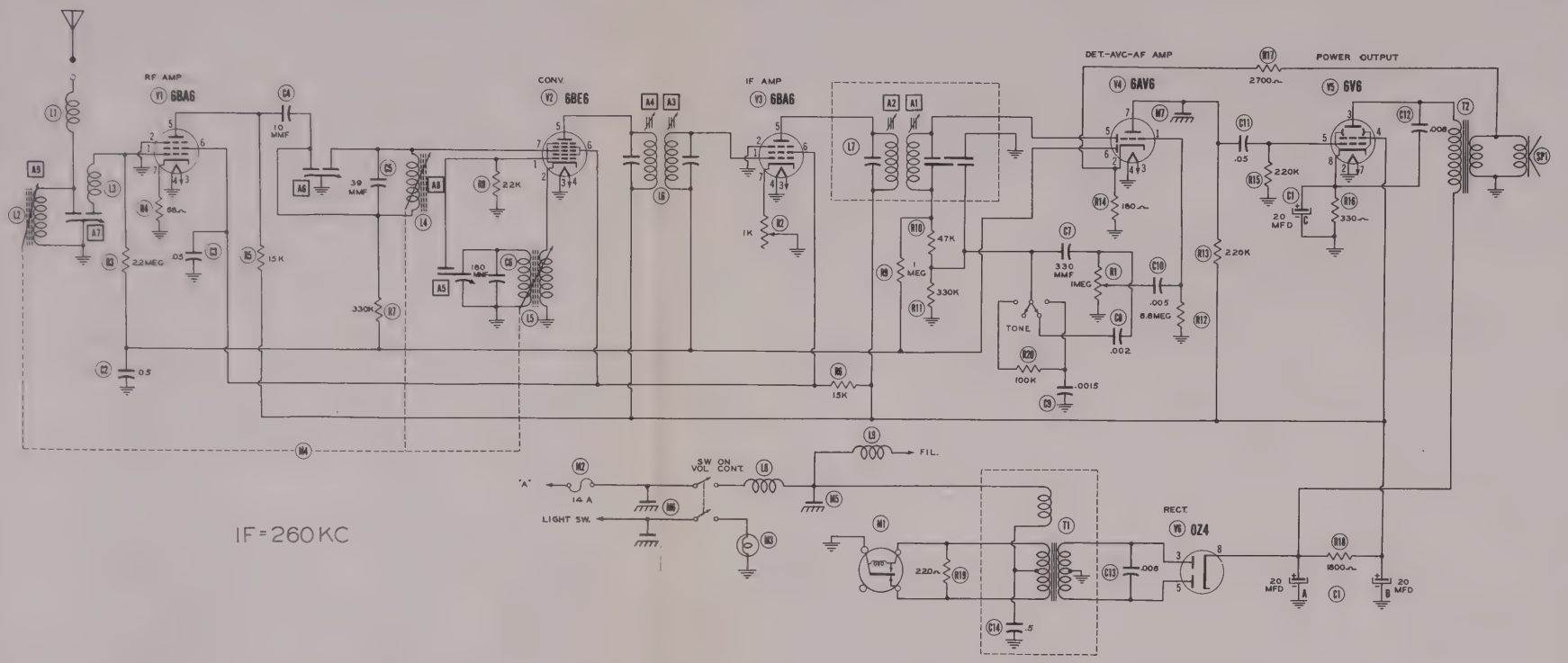
PUSHBUTTON ADJUSTMENT

SINCE THE PUSH BUTTONS ARE MECHANICAL, ANY PUSH BUTTON MAY BE ADJUSTED TO ANY STATION WITHIN THE RECEIVERS TUNING RANGE.

CAREFULLY TUNE IN THE DESIRED STATION MANUALLY.

PRESS THE SELECTED PUSH BUTTON TO THE RIGHT AND PULL OUTWARD.

PUSH THE BUTTON ALL THE WAY IN. REPEAT THIS PROCEDURE FOR EACH BUTTON.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	- 2VDC	0V	6.3VDC	0V	115VDC	65VDC	-.4VDC	
V 2	6BE6	1-5.5VDC	0V	0V	6.3VDC	200VDC	65VDC	- 3VDC	
V 3	6BA6	-.7VDC	0V	6.3VDC	0V	200VDC	65VDC	0V 3.1VDC	
V 4	6AV6	- 3VDC	1VDC	6.3VDC	0V	-.7VDC	-.1VDC	80VDC	
V 5	6V6GT	0V	0V	235VDC	200VDC	0V	11VDC	6.3VDC	11VDC
V 6	0Z4	0V	0V	270VAC	0V	270VAC	0V	0V	240VDC

† TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3.5Meg	0Ω	.4Ω	0Ω	†16KΩ	†23KΩ	68Ω	
V 2	6BE6	22KΩ	1.2Ω	0Ω	.4Ω	†1.8KΩ	†23KΩ	1.7Meg	
V 3	6BA6	1.4Meg	0Ω	.4Ω	0Ω	†1.8KΩ	†23KΩ	1KΩ 0Ω	
V 4	6AV6	6.8Meg	180Ω	.4Ω	0Ω	1.4Meg	370KΩ	†22(0KΩ	
V 5	6V6GT	Inf.	0Ω	†380Ω	†1.8KΩ	220KΩ	330Ω	.4Ω	330Ω
V 6	0Z4	0Ω	Inf.	350Ω	Inf.	360Ω	Inf.	Inf.	110KΩ

† MEASURED FROM PIN 8 OF V6.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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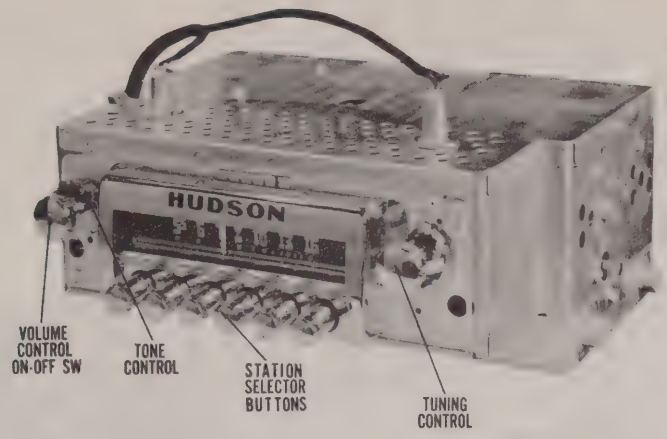

TRADE NAME	Hudson, Model 225908
MANUFACTURER	Hudson Motor Car Co., Detroit, Mich.
TYPE SET	Battery Operated Custom-Built Hudson Auto Radio, Superheterodyne Receiver
TUBES (SIX)	Types 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6V6GT Power Output, 6X5GT Rectifier
POWER SUPPLY	6Volt Storage Battery — RATING 6.4 Amp. at 6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD.	High side to pin 8, (Grid) of 6SA7, (V2) Low side to chassis.	265KC (400~ Mod.)	Tuning cores fully out.	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output.
2.	fig. 1	High side thru dummy to ant. receptacle. Low side to chassis.	535KC	Tuning core fully in.	"	A5	"
3.	"	"	1400KC	Tune for max. output.	"	A6, A7	Adjust for maximum output. If necessary adjust pointer, adjust screw to position pointer at 1400 on dial scale.
	The following should be performed only after tuning core replacement.						
4.	fig. 1	High side thru dummy to ant. receptacle. Low side to chassis.	1675KC	High frequency end stop. Screw all cores completely out of coils	Across voice coil.	A5, A6, A7	Adjust for maximum output.
5.	"	"	1400KC	1400KC Return cores to approx. their original position.	"	A8, A9, A10	"
6.	"	"	600KC	600KC "	"	All	Check calibration at 600KC and if necessary "rock" in" adjustment All. In models without oscillator shunt coil omit this step. If necessary repeat steps 4, 5, and 6 until no further improvement can be made.
7.	"	"	1605KC	Tuning cores fully out.	"		Check high end coverage. If tuner tunes above or below 1605KC, bend the lug stop near volume control to limit tuning range to 1605KC.

After set is installed, fully extend the antenna and tune in a weak station near 1400KC. Readjust A7 for maximum volume. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

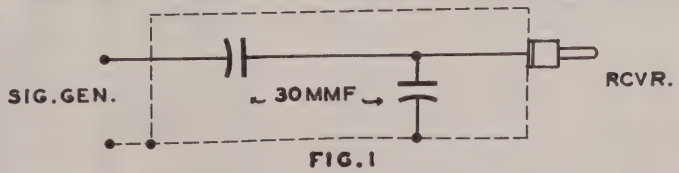

FIG. 1

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HUDSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	622-0001G	6SK7GT	8N	
V2	Converter	622-0002G	6SA7GT	8AD	
V3	IF Amplifier	622-0001G	6SK7GT	8N	
V4	Det.-AVC-AF	622-0003G	6SQ7GT	8Q	
V5	Power Output	622-0004G	6V6GT	7AC	
V6	Rectifier	633-0001G	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HUDSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	350	161-2000	AFH2-50		UP2145		TVL-3634	■ Filter
B	10	300							▲ Filter
C2	10000		168-0002D	BPD-01	DD-103	1D3S1	821-01	5HK-S1	RF Coupling
C3	100	500	163-0100	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	AVC Filter
C4	33	500		S133	D6-330		GP1K-330	5GA-Q33	RFCoupling †
C5	250		163-0250	SI250	D6-251	5W5T25	GP2K-251		AVC Filter
C6	.047	200	162-0215	P288-047	DF-503	PTE4S5		2TM-S47	AVC Filter
C7	5	500		1469-000005	TCZ-4.7	5R5V5	NP0K-050	MS-55	Fixed Trimmer *
C8	100		163-0100	1469-0001	TCZ-100	5R5T1	NP0-333-101	MS-31	Osc. Grid Cap.
C9	230		165-0230				N150L-231		Fixed Padder
C10	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Screen Bypass ‡
C11	.047	200		P288-047	DF-503	PTE4S5		2TM-S47	IF Amp. Cathode ‡
C12	4000		166-4000D	BPD-004	D6-402	1D5D4	GP2-333-402	5HK-D5	Audio Coupling
C13	220	500		1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	AF Amp. Plate
C14	10000		168-0002D	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Audio Coupling
C15	.0047	400		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Tone Comp. ¶
C16	.022	200	162-0212	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C17	.0056	600		P688-006	D6-462	PTE6D6	GP2-333-562	6TM-D6	Output Plate ††
C18	.0082	1600	160-16282			PTE16D8		MB-D8	Buffer Cap
C19	.5	100	169-0001	P185-5		GT2P5		68P20	Hash Filter
C20	.5	100	169-0001	P185-5		GT2P5		68P20	Hash Filter *

* Not used in all models.
† Some models use 100MMF. in this application. (Part # 163-0100)
‡ Some models use .1MFD. in this application. (Part # 162-0401)
¶ Some models use .004MFD. in this application. (Part # 166-4000D)
†† Some models use .005MFD. in this application. (Part #162-0625)

CONTROLS

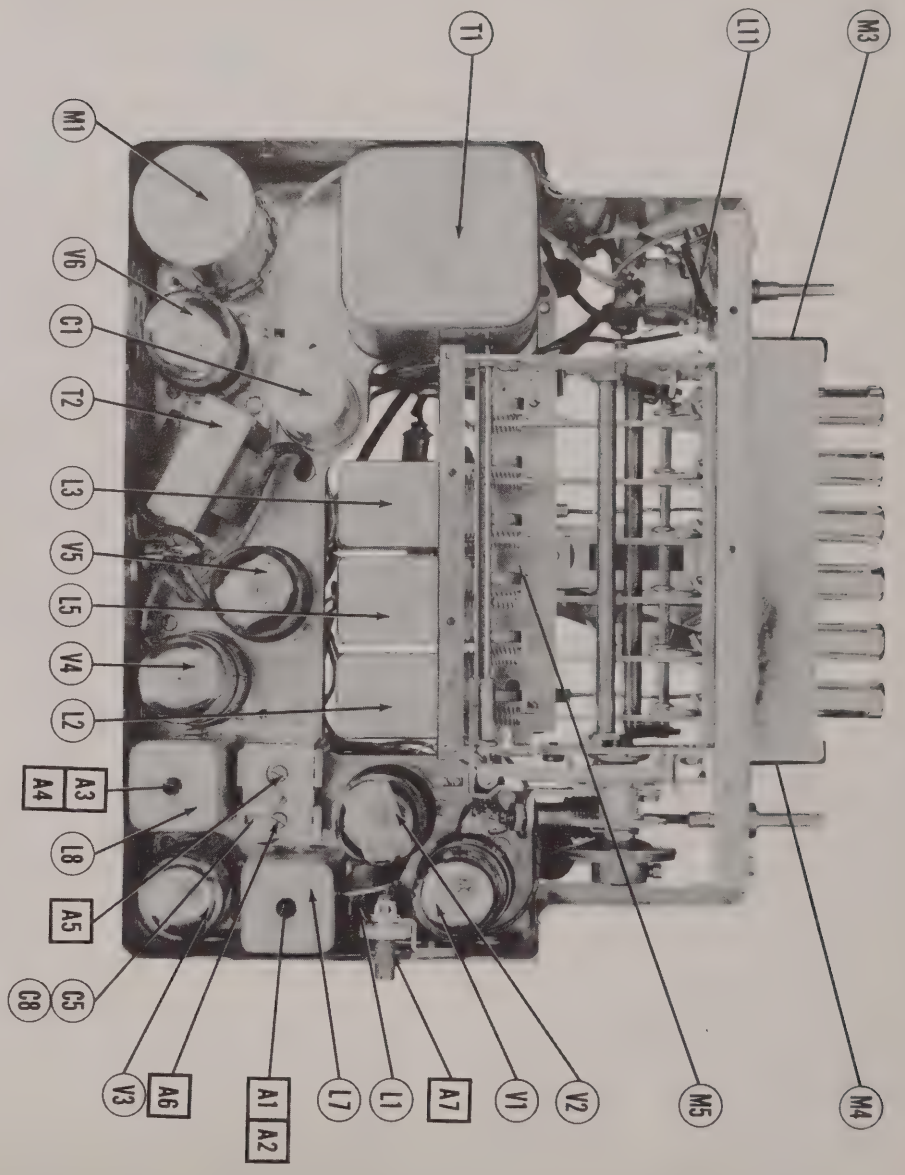
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HUDSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1.5Meg	½	157-0013	Concentrikit B11-139 #			Tone Control - Front
B	250KΩ	½	Not req.	B18-130X #			Volume Control and SW - Rear
C	Shaft end		Not req.	E-187 #			Attach per instructions in "Concentrikit"
D	Switch		Not req.	76-1 #			Attach per insturctions in "Concentrikit"
R2	2000Ω	1	159-0004				Sensitivity Control - Wire Wound

\# Additional parts to be used with "Concentrikit"

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HUDSON PART No.	IRC PART No.	IDENTIFICATION CODES
R3	1Meg	½	181-0105	BTS-1Meg	AVC Network - See Note 1
R4	10KΩ	1	182-0103	BTA-10K	RF Amp. Plate
R5	1Meg	½	181-0105	BTS-1Meg	AVC Network - See Note 1
R6	5.6Meg	½	181-0565	BTS-5.6Meg	AVC Network
R7	22KΩ	½	181-0223	BTS-22K	Osc. Grid
R8	820Ω	½	181-0821	BTS-820	Osc. Coil Shunt - See Note
R9	12KΩ	2	183-0123	BTB-12K	Screen Dropping
R10	22KΩ	½	181-0223	BTS-22K	Voltage Divider
R11	1Meg	½	181-0105	BTS-1Meg	AVC Network
R12	15Meg	½	181-0156	BTS-15Meg	AF Amp. Grid
R13	22KΩ	½	181-0223	BTS-22K	Tone Compensation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HUDSON PART No.	IRC PART No.	
R14	330KΩ	½	181-0334	BTS-330K	AF Amp. Plate
R15	330KΩ	½	181-0334	BTS-330K	Output Grid
R16	270Ω	1	182-0271	BTA-270	Output Cathode
R17	1800Ω	2	183-0182	BTB-1800	Filter
R18	82Ω	½	181-0820		Hash Suppressor
R19	82Ω	½	181-0820		Hash Suppressor

Note 1 Some models use 330KΩ resistor in this application.
Note 2 Not used in all models.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	HUDSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 3.8A	540VCT .052ADC			141-0012		P-4079	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HUDSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5.8KΩ	3Ω	550Ω	.5Ω	143-0014	A-3878	A-2930	RO-9	

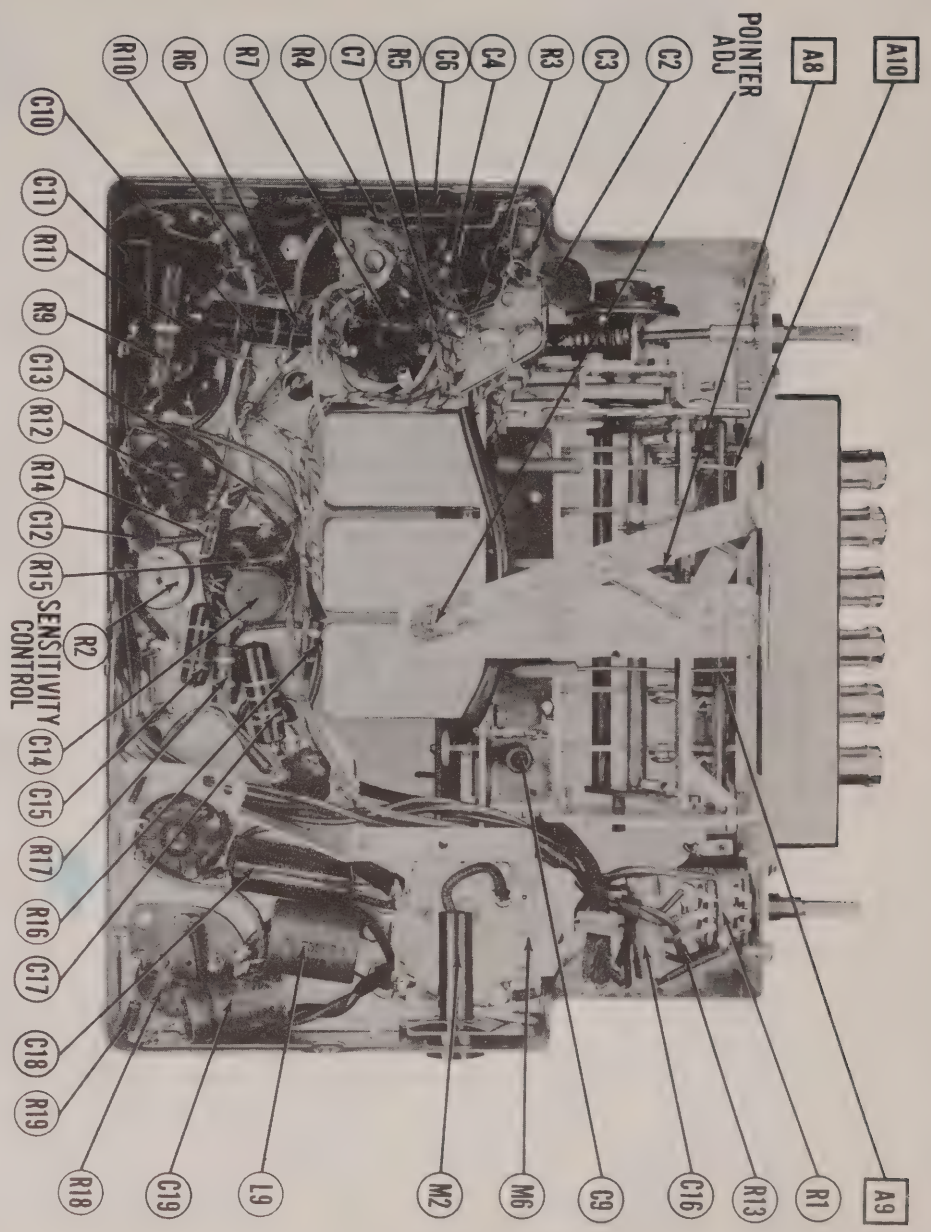
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	HUDSON PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3Ω	539-0006	ST810 Model P69-V	69A2	
	CONE DIA.	V. C. DIA.				
SP2	6"X9"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	HUDSON PART No.		
L1	Ant. Hash Choke	.8Ω		148-0001		
L2	Ant. Coil	13Ω		112-0007		
L3	RF Coil	15Ω		112-0007		Not used in all models
L4	RF Choke			146-0010		
L5	Osc. Coil	2.8Ω	.8Ω	113-0016		
L6	Osc. Coil Shunt			116-0002		Not used in all models
L7	1st. IF	46Ω	46Ω	121-0015		
L8	2nd. IF	50Ω		122-0015		
L9	Hash Choke	.2Ω		147-0007		Not used in all models
L10	Hash Choke			147-0001		
L11	Fil. Choke	.0Ω		148-0007		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				HUDSON PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	INT.	6.3V	115∿	511-0001	5301	5301	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			HUDSON PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	SFE	14A	191-0002	562-0007	307014	155014A	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					HUDSON PART No.		
M3	Bayonet	6-8	.25	Blue	611-0044		Type # 44
M4	Bayonet	6-8	.25	Blue	611-0044		Type # 44

MISCELLANEOUS

ITEM No.	PART NAME	HUDSON PART No.	NOTES
M5	Tuner Unit	117-001	
M6	Spark Plate		
A5	Trimmer	172-0029	Osc. Adj.
A6	Trimmer	172-0028	RF Adj.
A7	Trimmer	172-0027	Ant. Adj.

SENSITIVITY CONTROL ADJUSTMENT

CONNECT A VOLTMETER BETWEEN PIN 5, (CATHODE), OF 6SK7GT, (V3), AND CHASSIS.

ADJUST THE SENSITIVITY CONTROL UNTIL VOLTMETER READS EXACTLY 2 VOLTS.

PUSHBUTTON ADJUSTMENTS

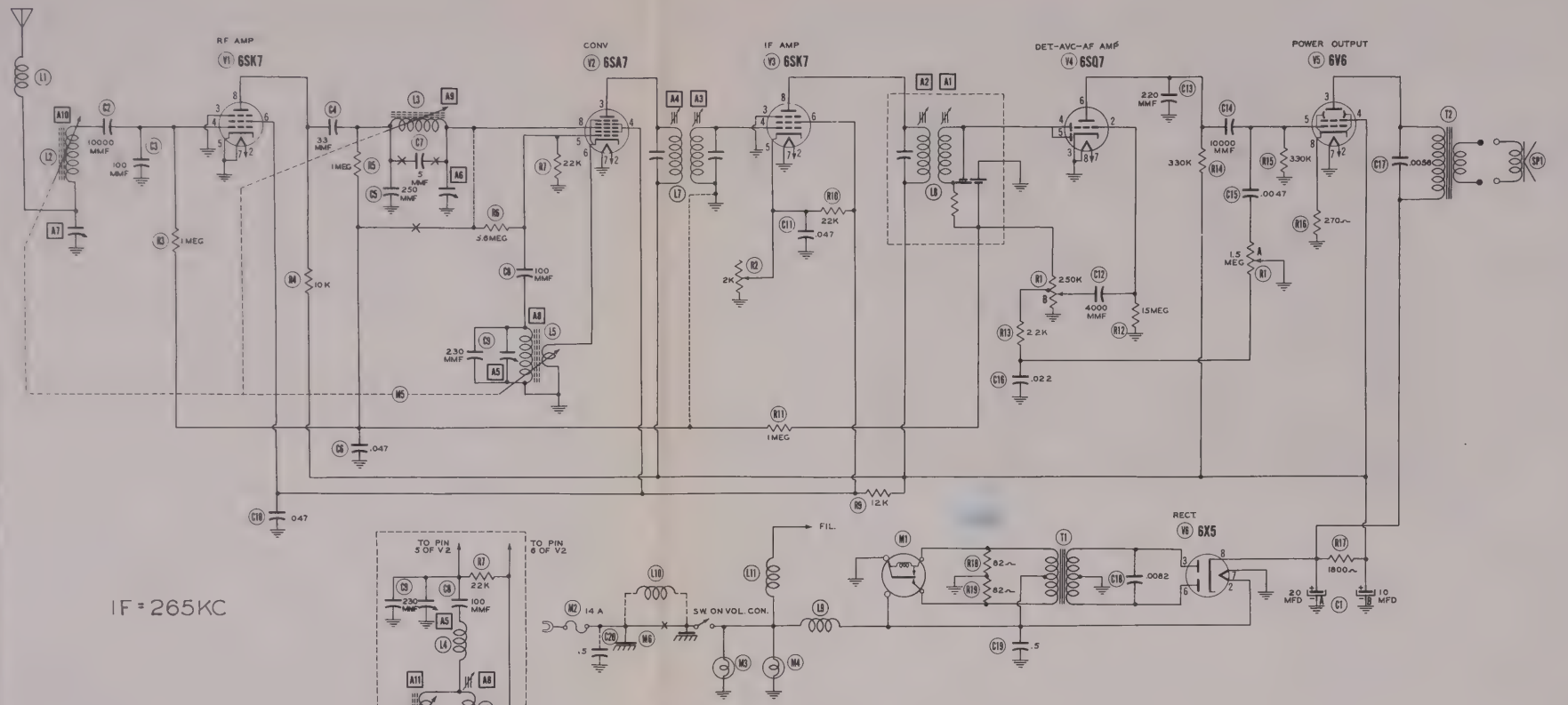
SINCE THE PUSHBUTTONS ARE MECHANICAL, ANY BUTTON MAY BE ADJUSTED TO ANY STATION WITHIN THE RECEIVERS TUNING RANGE.

CAREFULLY TUNE IN THE DESIRED STATION MANUALLY.

LOOSEN THE PUSHBUTTON BY TURNING THE BUTTON COUNTER-CLOCKWISE.

PRESS THE BUTTON ALL THE WAY IN, AND THEN RELEASE IT.

TURN THE BUTTON CLOCKWISE UNTIL IT IS FINGER TIGHT.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7GT	0 V	6.3VDC	0V	-.6VDC	0V	65VDC	0V	150VDC
V 2	6SA7GT	0V	0V	195VDC	65VDC	8-7.3VDC	0V	6.3VAC	-.3VDC
V 3	6SK7GT	0V	6.3VDC	4.9VDC	0V	4.9VDC	65VDC	0V	195VDC
V 4	6SQ7GT	0V	-.5VDC	0V	-.3VDC	-.3VDC	90VDC	6.3VDC	0V
V 5	6V6GT	0V	6.2VDC	215VDC	195VDC	0V	0V	0V	9.3VDC
V 6	6X5GT	0V	0V	260VAC	0V	260VAC	0V	6.3VDC	235VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7GT	0Ω	.4Ω	0Ω	2.2Meg	0Ω	†14KΩ	0Ω	†12KΩ
V 2	6SA7GT	0Ω	0Ω	†1.8KΩ	†14KΩ	22KΩ	.8Ω	.4Ω	2.2Meg
V 3	6SK7GT	0Ω	.4Ω	1KΩ	46Ω	1KΩ	†14KΩ	0Ω	†1.8KΩ
V 4	6SQ7GT	0Ω	1Meg	0Ω	280KΩ	280KΩ	†330KΩ	.4Ω	0Ω
V 5	6V6GT	0Ω	.4Ω	†550Ω	†1.8KΩ	330KΩ	Inf.	0Ω	270KΩ
V 6	6X5GT	0Ω	0Ω	310Ω	Inf.	330Ω	Inf.	.4Ω	90KΩ

† MEASURED FROM PIN 8 OF V6

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 op

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MASCO
MODEL ME-52

MASCO
MODEL ME-52

TRADE NAME	Masco, Model ME-52
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th St., Long Island City 3, New York
TYPE SET	AC Operated Audio Amplifier
TUBES (NINE)	Types 6S67Mic. 1 and 2 Pre-Amp., 6SJ7 1st AF Amp., 6SC7 2nd AF-Phase Inv., (4) 6L6G Power Output, (2) 5V4G Rectifier
POWER SUPPLY	110-120 volts AC RATING 1.5amp. @ 117 volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Mic #1 pre-amp. - Mic #2 pre-amp.	6SC7	6SC7	8S	
V2	1st AF Amplifier	6SJ7	6SJ7	8N	
V3	2nd AF Amplifier -Phase Inverter	6SC7	6SC7	8S	
V4	Power Output	6L6G	6L6G	7AC	
V5	Power Output	6L6G	6L6G	7AC	
V6	Power Output	6L6G	6L6G	7AC	
V7	Power Output	6L6G	6L6G	7AC	
V8	Rectifier	5V4G	5V4G	5L	
V9	Rectifier	5V4G	5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	16	450		PRS450/16		BR1645A		TVA-1708	Filter
C2A	10	450		AFH 4-10		UPT1111145		TVL-4760	▪ Mic Pre-Amp. Dec.
B	10	450							■ 1st AF Amp. Dec.
C	10	450							▲ 2nd AF Amp. Dec.
D	10	450							Audio Output Screen
C3	10	50		PRS50/10		BR105		TVA-1304	1st AF Amp. Cathode
C4	50	50		PRS50/50		BR505		TVA-1308	Audio Output Cathode
C5	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C6	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C7	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C8	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C9	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	1st AF Amp. Screen
C10	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C11	470			S1470	D6-471	5W5T5	GP2K-471	5GA-T47	Tone Comp.
C12	.005	600		P688-005	D6-502	PTE6S5	GP2-333-502	6TM-D5	Tone Comp.
C13	470			S1470	D6-471	5W5T5	GP2K-471	5GA-T47	Tone Comp.
C14	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C15	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C16	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Line Filter

CONTROLS

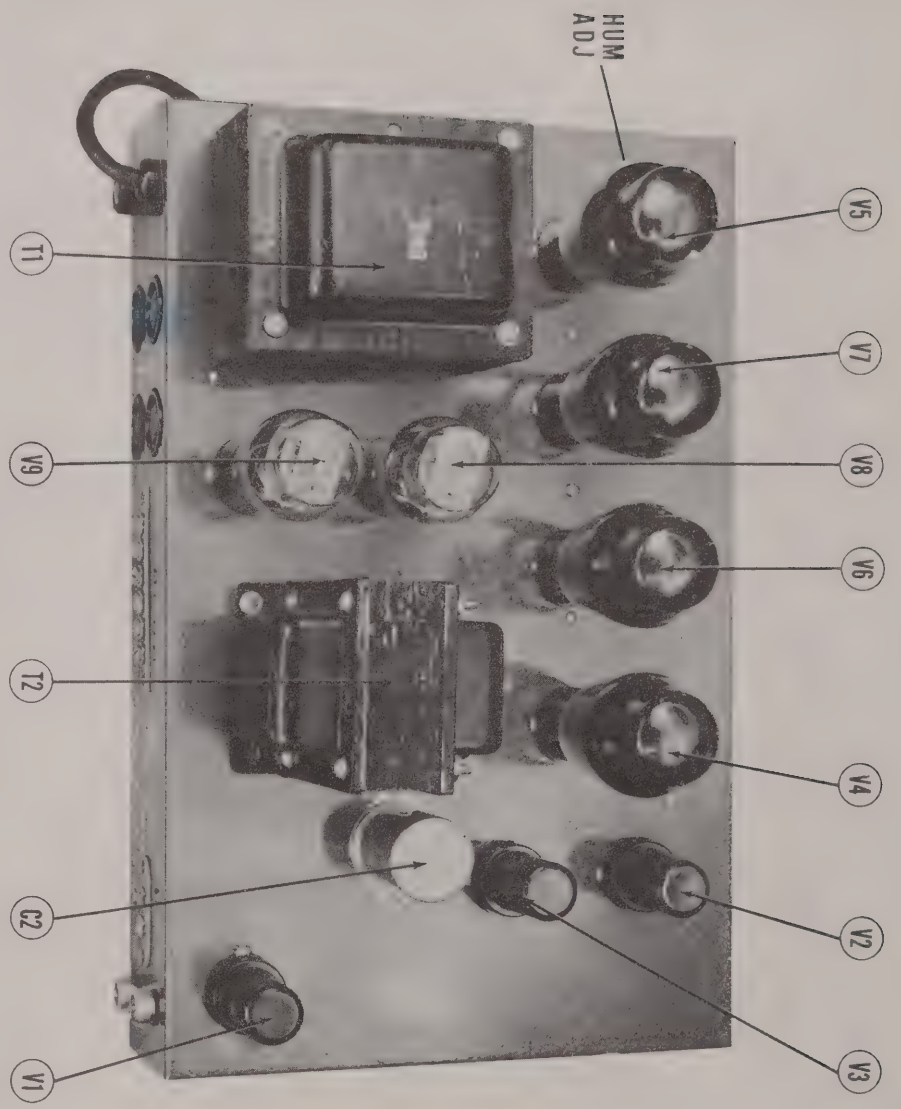
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500K	1/2	33-010-188	Q13-133	AG-60-Z	B-60	Mike 1 Volume Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R1A Per Instructions
R2A	500K	1/2	33-010-188	Q-13-133	AG-60-Z	B-60	Mike 2 Volume Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R2A Per Instructions
R3A	500K	1/2	33-010-188	Q13-133	AG-60-Z	B-60	Phono Volume Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R3A Per Instructions
R4A	500K	1/2	33-010-188	Q13-133	AG-60-Z	B-60	Treble Tone Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R4A Per Instructions
R5A	500K	1/2		Q13-133	AG-60-Z	B-60-S	Bass Tone Control
B	Switch			76-1	SWB	Not Req.	Attach to R5A Per Instructions
C	Shaft			Not Req.	RS-2	Not Req.	Attach to R5A Per Instructions
R6	50Ω	2		W-50 #	43-50 #	VK-116	Hum Control Wire Wound

Fashion shaft to duplicate original.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
R7	5.6Meg	1/2		BTS-5.6Meg	Mike 1 Pre-Amp. Grid
R8	270KΩ	1/2		BTS-270K	Mike 1 Pre-Amp. Plate
R9	5.6Meg	1/2		BTS-5.6Meg	Mike 2 Pre-Amp. Grid
R10	270KΩ	1/2		BTS-270K	Mike 2 Pre-Amp. Plate
R11	270KΩ	1/2		BTS-270K	Isolation
R12	270KΩ	1/2		BTS-270K	Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
R13	270KΩ	½		BTS-270K	Isolation
R14	1000Ω	½		BTS-1000	1st AF Amp. Cathode
R15	270KΩ	½		BTS-270K	1st AF Amp. Plate
R16	1Meg	½		BTS-1Meg	1st AF Amp. Screen
R17	47KΩ	½		BTS-47K	Decoupling
R18	47KΩ	½		BTS-47K	1st AF Amp. Decoupling
R19	270KΩ	½		BTS-270K	Tone Compensation
R20	27KΩ	½		BTS-27K	2nd AF Amp. Grid See Note 1
R21	1000Ω	½		BTS-1000	2nd AF Amp. Phase Inverter Cathode
R22	100K.	½		BTS-100K	2nd AF Amp. Plate
R23	8200Ω	½		BTS-8200	Phase Inverter Grid
R24	100KΩ	½		BTS-100K	Phase Inverter Plate
R25	270KΩ	½		BTS-270K	Output Grid
R26	270KΩ	½		BTS-270K	Output Grid
R27	125Ω	10		1 3/4A-125	Output Cathode Wire Wound
R28	150Ω	½			Parasitic Suppressor
R29	150Ω	½			Parasitic Suppressor
R30	20Ω	½			Parasitic Suppressor
R31	20Ω	½			Parasitic Suppressor
R32	15Ω	½			Parasitic Suppressor
R33	15Ω	½			Parasitic Suppressor
R34	12KΩ	½		BTS-12K	2nd AF Amp. Plate Decoupling
R35	20KΩ	10		1 3/4A-20K	Bleeder Wire Wound
R36	5000Ω	10		1 3/4A-5000	Filter Wire Wound
R37	125Ω	10		1 3/4A-125	Filter Wire Wound

Note 1 Some models use 270KΩ in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ②1.5A	680VCT .200ADC	5VAC ②4A	6.3VAC ②4.8A	A50	PC-8413 ①	P-2955 ③	

① Drill new mounting holes.
③ Add Series Resistor to reduce plate vpltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	4.4KΩ CT	2Ω 4Ω 8Ω 15Ω 500Ω	85Ω CT	.2Ω .25Ω .4Ω .5 1.6Ω	0-50	A-3851 ① ②	P3129		① Drill new mounting holes. ② Do not use inverse feedback winding on A-3851

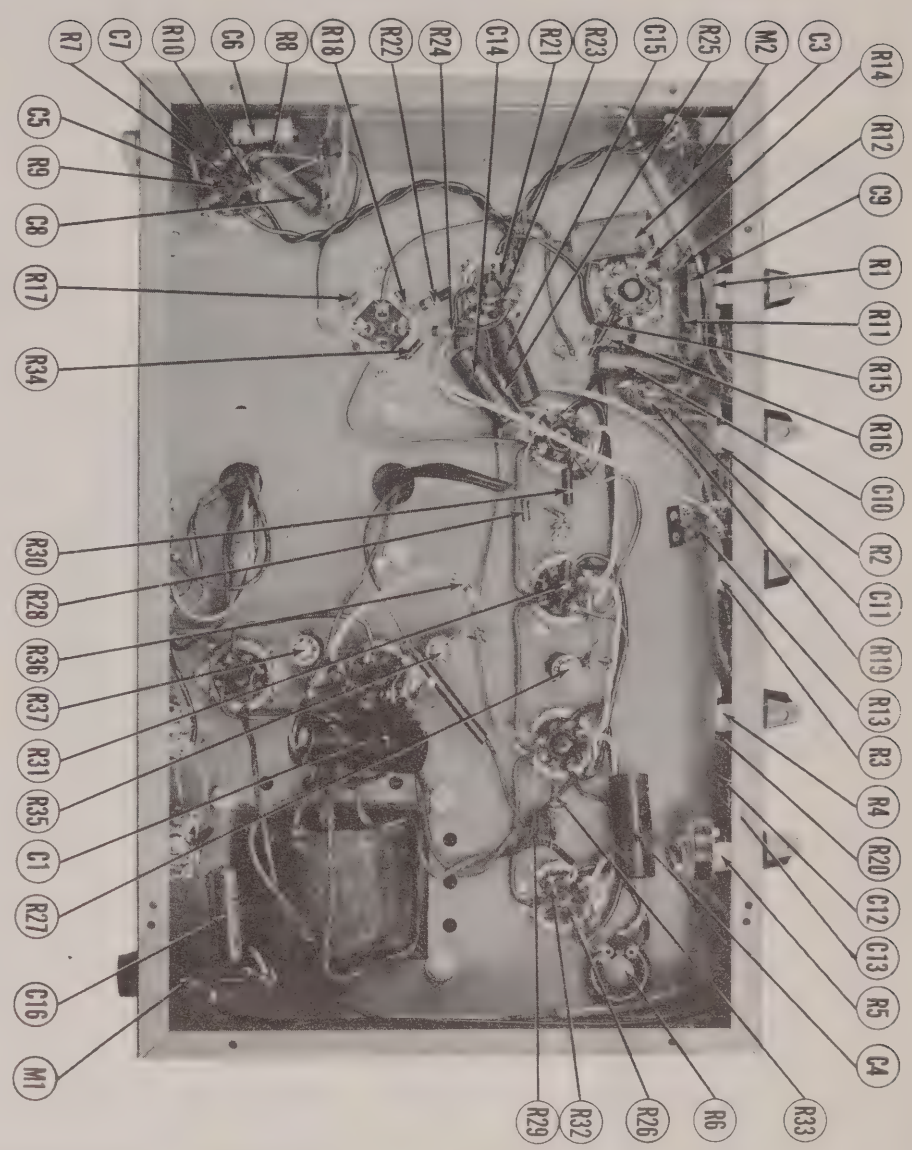
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			MASCO PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Slo-Blo	3A			313003	341001	

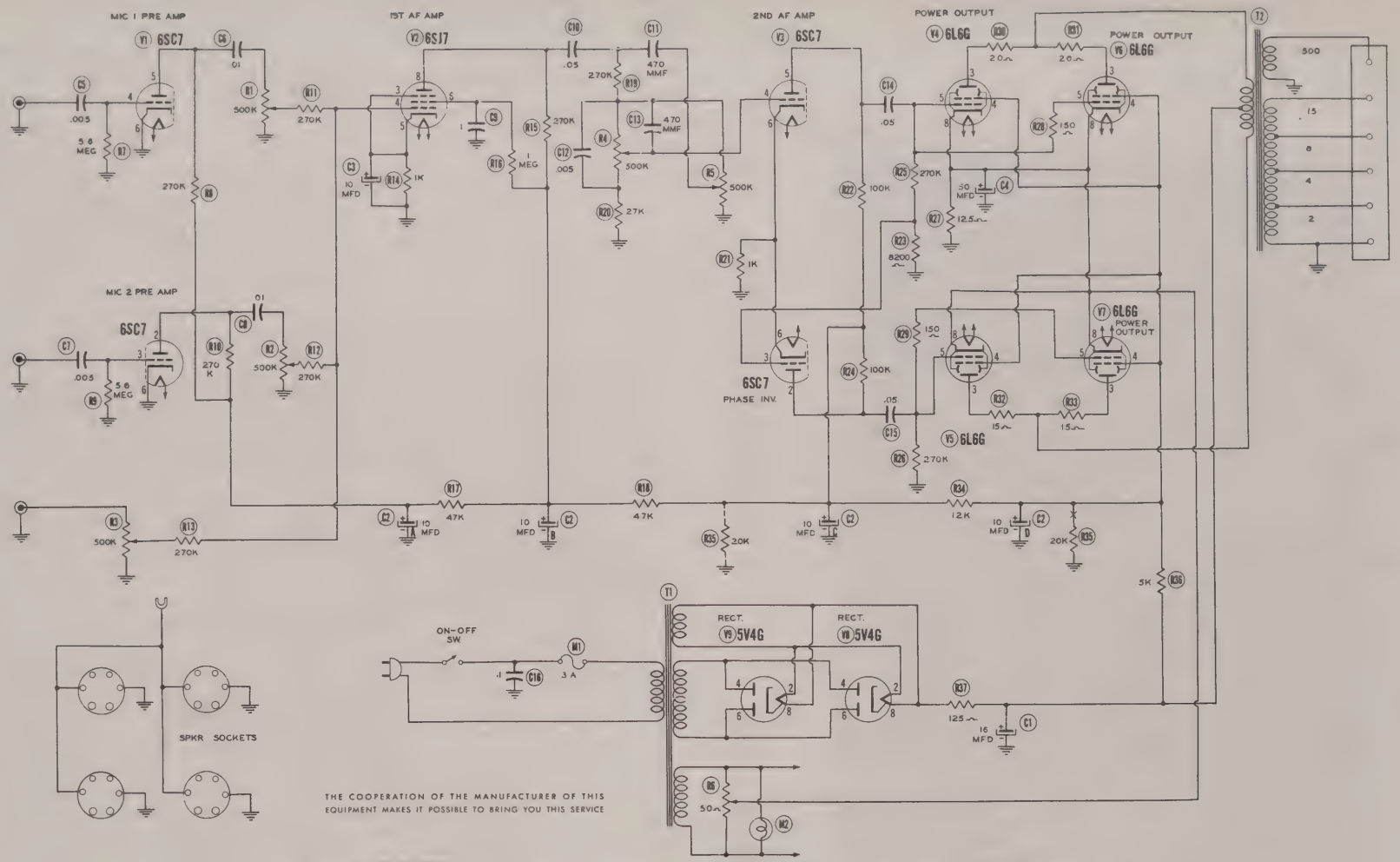
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MASCO PART No.		
M2	Bayonet	6-8	.15	Brown			Type number 47.

CHASSIS—BOTTOM VIEW



MASCO MODEL ME-52



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0V	53VDC	-.5VDC	-.5VDC	53VDC	0V	¶0V	¶6.3VAC
V 2	6SJ7	0V	¶6.3VAC	.7VDC	-.1VDC	.7VDC	21VDC	¶0V	21VDC
V 3	6SC7	0V	135VDC	0V	0V	140VDC	1.7VDC	¶0V	¶6.3VAC
V 4	6L6G	0V	¶6.3VAC	380VDC	265VDC	.1VDC	.1VDC	¶0V	22VDC
V 5	6L6G	0V	¶6.3VAC	380VDC	265VDC	.1VDC	0V	¶0V	22VDC
V 6	6L6G	0V	¶6.3VAC	380VDC	265VDC	.1VDC	0V	¶0V	22VDC
V 7	6L6G	0V	¶6.3VAC	380VDC	265VDC	.1VDC	0V	¶0V	22VDC
V 8	5V4G	0V	410VDC	0V	385VAC	0V	385VAC	0V	410VDC
V 9	5V4G	0V	410VDC	0V	385VAC	0V	385VAC	0V	410VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6SC7	0Ω	†380KΩ	5.6Meg	5.6Meg	†380KΩ	0Ω	¶0Ω	¶.1Ω	
V 2	6SJ7	0Ω	¶.1Ω	1KΩ	100KΩ	1kΩ	†1Meg	¶0Ω	†330KΩ	
V 3	6SC7	0Ω	†115KΩ	8.2KΩ	29KΩ	†115KΩ	1KΩ	¶0Ω	¶.1	
V 4	6L6G	0Ω	¶.1Ω	†185Ω	†5KΩ	270KΩ	270KΩ	¶0Ω	125Ω	
V 5	6L6G	0Ω	¶.1Ω	†180Ω	†5KΩ	270KΩ	Inf.	¶0Ω	125Ω	
V 6	6L6G	0Ω	¶.1Ω	†185Ω	†5KΩ	270KΩ	Inf.	¶0Ω	135Ω	
V 7	6L6G	0Ω	¶.1Ω	†180Ω	†5KΩ	270KΩ	Inf.	¶0Ω	125Ω	
V 8	5V4G	Inf.	25KΩ	Inf.	30Ω	Inf.	30Ω	Inf.	25KΩ	
V 9	5V4G	Inf.	25KΩ	Inf.	33Ω	Inf.	33Ω	Inf.	25KΩ	Inf.

† MEASURED FROM PIN 8 OF V8 AND V9.
¶ MEASURED FROM PIN 7 OF 7

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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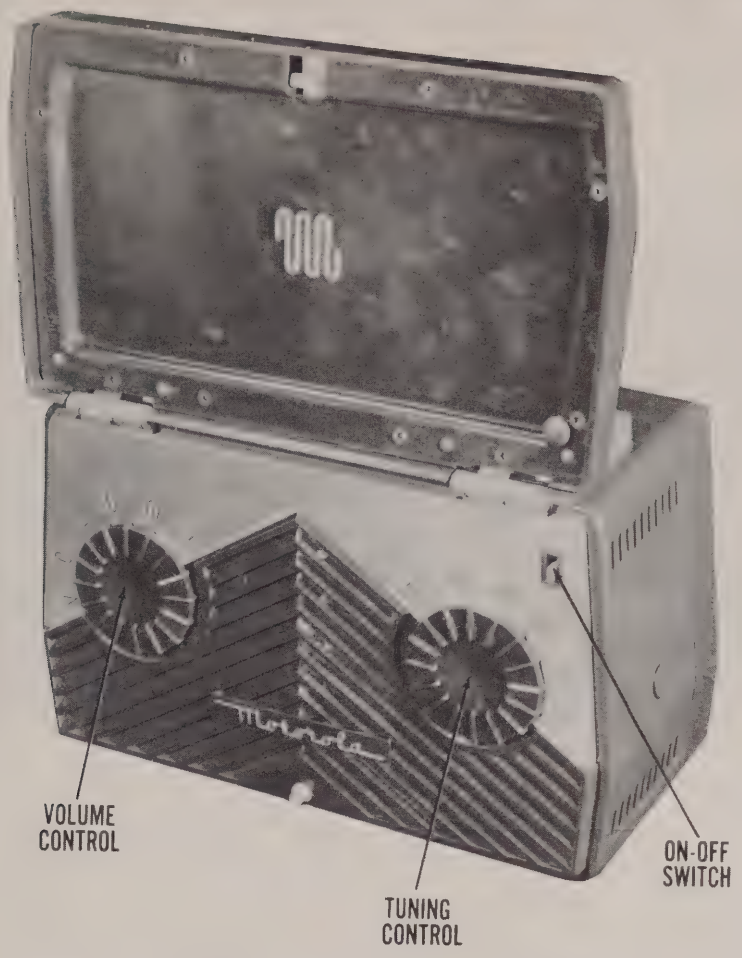
149-7

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

MOTOROLA
MODELS 51M1U, 51M2U (Ch. HS-283)



MOTOROLA
MODELS 51M1U, 51M2U (Ch. HS-283)

TRADE NAME	Motorola, Models 51M1U, 51M2U (Ch. HS-283)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Illinois
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5-Converter, 1U4 IF Amp., 1U5 Det.-AVC-AF, 354 Power Output
POWER SUPPLY	110-120 volts AC-DC or 3 volts "A" Supply and 67.5 volts "B" Supply
RATING	.125 Amp. @ 117 volts AC or 150MA @ 3 volts DC and 8MA @ 67.5 volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6, (grid) of 1R5, (V1). Low side to chassis.	455KC (400∿Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	"	1620KC	"	"	A4	"
3.		Loop	1400KC	"	"	A5	Reinstall set in cabinet. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL 51M1U

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det.-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	23B691995			EDL5315		TVA-3425	Filter
B	40	150				X20			Filter
C	250	10							Fil. Filter
C2	500		21K481377	8I500	D6-501	5W5T5	GP2K-501	5GA-T5	RF Coupling
C3	10000		21K482726	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Osc. Anode
C4	.05	100	8K71213	P288-05	DF-503	PTE4S5		2TM-S5	Conv. Fil.
C5	47		21K77373	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	IF Coupling
C6	10000		21K482726	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Decoupling
C7	.05	100	8K71213	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C8	10000		21K482726	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AF Amp. Screen
C9A	100			SI100	D6-101	5W5T1	GP1K-101		Diode RF Filter ¶
B	2000		♦21K691992	SI2000	D6-202	1W5D2	GP2-333-103	♦34C4	Audio Coupling ¶
C	100			SI100	D6-101	5W5T1	GP1K-101		AF Amp. Plate ¶
D	5000			BPD-005	DD-502	1D5D5	811-005		Audio Coupling ¶
C10	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Audio Output Plate
C11	.05	200	†24K691986	P288-05 ‡	DF-503 †	PTE4S5‡		2TM-S5 ‡	AF Amp. Fil.
C12	.05	400	8K471635	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C13	100								Output Grid * ¶

* Not used in all models.
♦ Items C9A, C9B, C9C, C9D are combined into one unit.
† Includes coil wound on capacitor.
‡ Rewind coil same as on original capacitor.
¶ In some models C13, R8, R9, R10 may also be included in a C-R unit (Part No. 21B60136)

CONTROLS

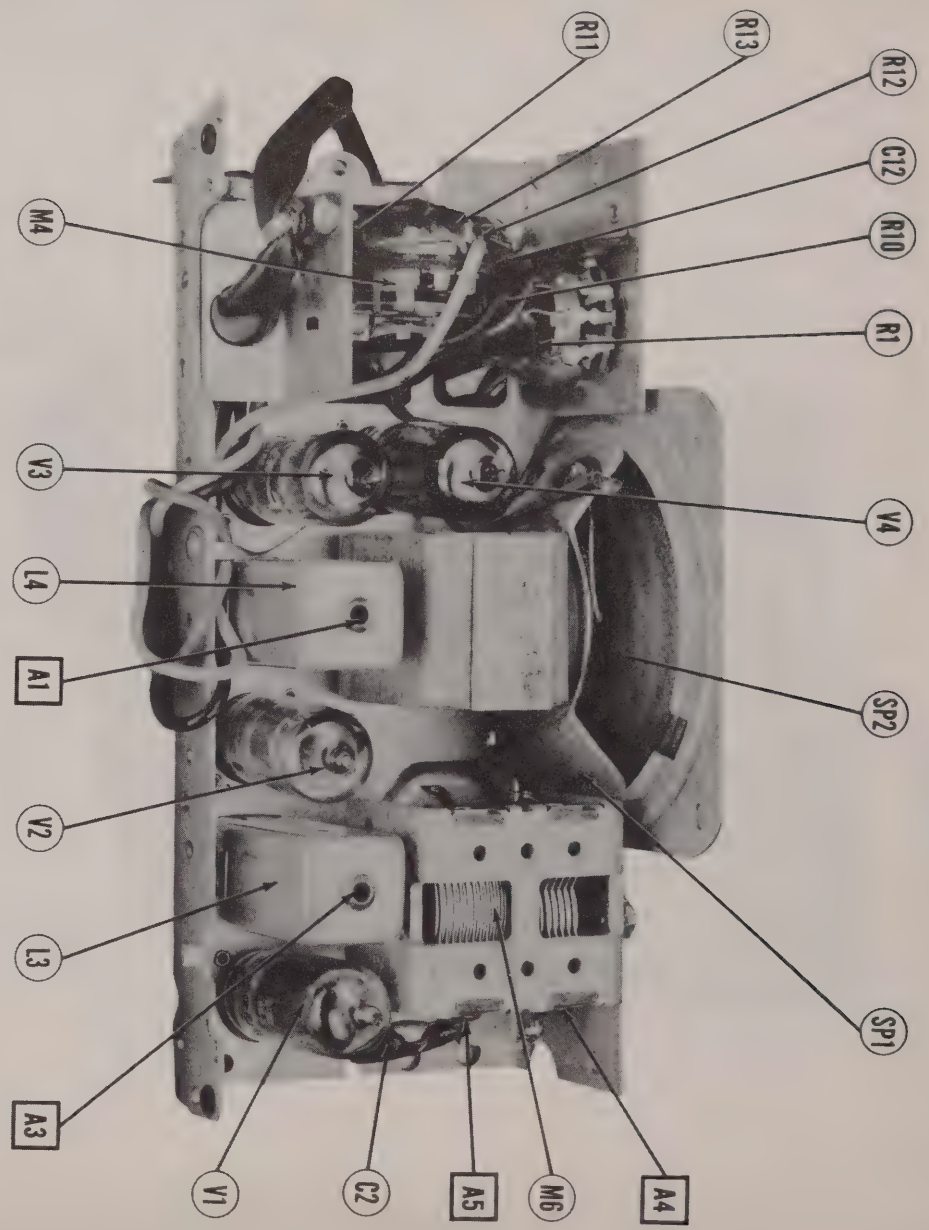
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	1Meg	½	18A691993				Volume Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	4.7Meg	½	6R2122	BTS-4.7Meg	AVC Network
R3	100KΩ	½	6R6031	BTS-100K	Osc. Grid
R4	22KΩ	½	6R6397	BTS-22K	Osc. Anode
R5	10Meg	½	6R2109	BTS-10Meg	IF Amp. Grid
R6	3.3Meg	½	6R2118	BTS-3.3Meg	AVC Network
R7	13Meg	½		BTS-12Meg	AF Amp. Grid-See Note 1
R8	4.7Meg	½	6R2122	BTS-4.7Meg	AF Amp. Screen
R9	1Meg	½	6R6004	BTS-1Meg	AF Amp. Plate
R10	3.3Meg	½	6R2118	BTS-3.3Meg	Output Grid
R11	3300Ω	½	6R5581	BTS-3300	Bias Network
R12	220KΩ	½	6R6015	BTS-220K	Bias Network
R13	820Ω	½	6R6269	BTS-820	Bias Network
R14	270Ω	½	6R6432	BTS-270	Filament Shunt
R15	27Ω	½	6R5683		Filament String
R16	390Ω	½	6R5554	BTS-390	Filament String
R17	600Ω	½			Filament String-See Note 2
R18A	150Ω	10	17K692009		Surge Limiter
B	2000Ω	10			Filament Dropping

Note 1 Some models use 10Meg resistor in this application.
Note 2 Some models use 680Ω resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	7.3KΩ	4Ω	350Ω	.5Ω	25K692006		A-2927 ①	RO-13 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	VIKING PART No.	QUAM PART No.	
SP1	FIELD	V.C. IMP.	50K600141 or 50K600142 or 50B610070	35J4	3A07	
	PM	4Ω				
	CONE DIA.	V.C. DIA.				
SP2	3 1/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.		
L1A	Loop Ant.	2.4Ω		1X692159		Includes Loop and Front Cover Assembly Complete Model 51M1U (Green)
B	Loop Ant.			1X692160		Includes Loop, Panel and hinge-less Front Cover Model 51M1U (Green)
C	Loop Ant.			24B692200		Includes Loop and Panel Less Hinges Model 51M1U (Green)
D	Loop Ant.			1X600129		Includes Loop and Front Cover Assembly Complete Model 51M2U (Maroon)
E	Loop Ant.			1X600130		Includes Loop, Panel and Hinge-Less Front Cover Model 51M2U (Maroon)
F	Loop Ant			24K600132		Includes Loop and Panel Less Hinges Model 51M2U (Maroon)
L2	Osc. Coil	2.3Ω	11Ω	24K600097		
L3	1st IF	35Ω	35Ω	24K600824		
L4	2nd IF	44Ω	44Ω	24K600825		

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	MOTOROLA PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.058A	48IB791092	N1B-15	5M4	

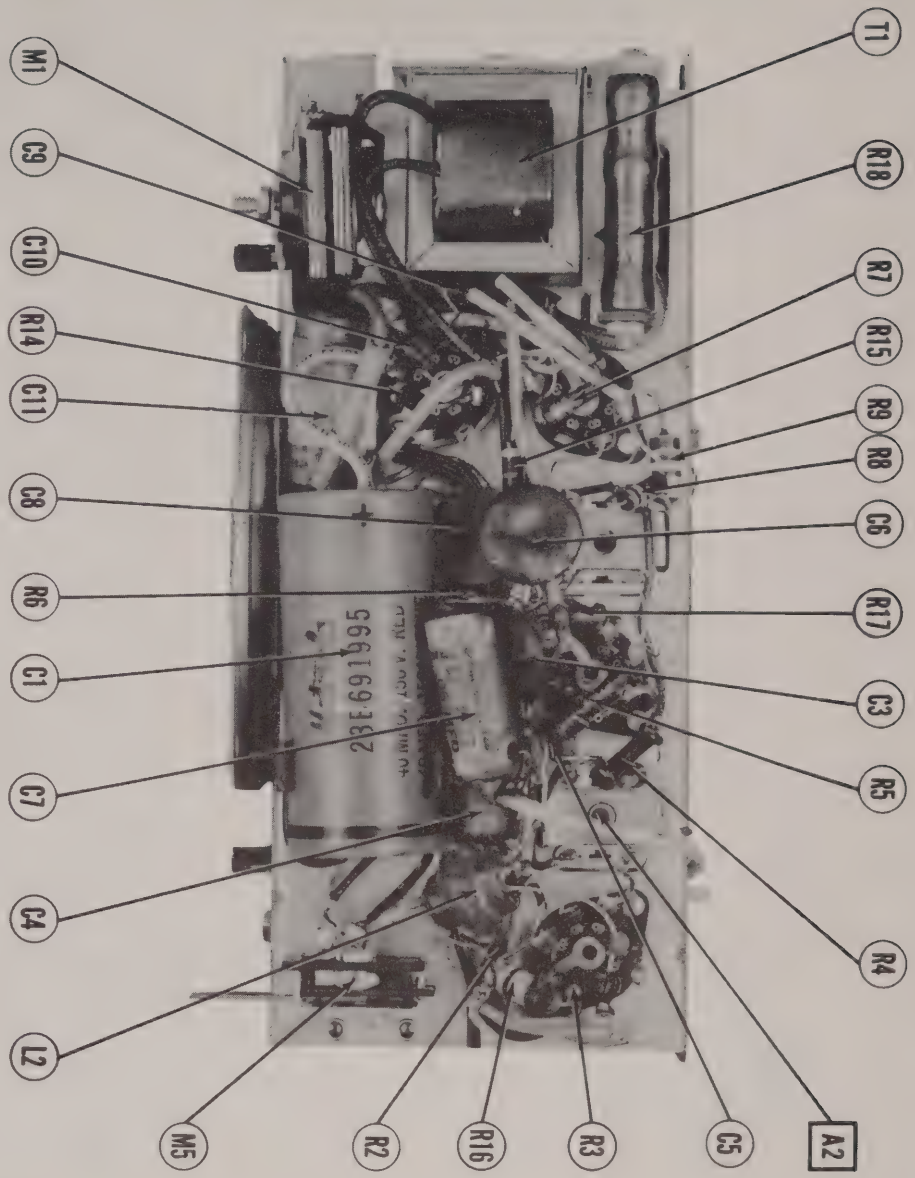
BATTERIES

ITEM No.	VOLTAGE	MOTOROLA PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	3V "A"		950			2R			Use 2 in series.
M3	67.5V"B"			467			XX45		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Switch	40B471927	AC/DC-Battery
M5	Switch	40A691999	On-Off
M6	2 Gang Var. Cap.	19K692007	(15-410MMF, 16-162MMF)
	Cabinet	1X601812	Model 51M1U
	Cabinet	1X601816	Model 51M2U

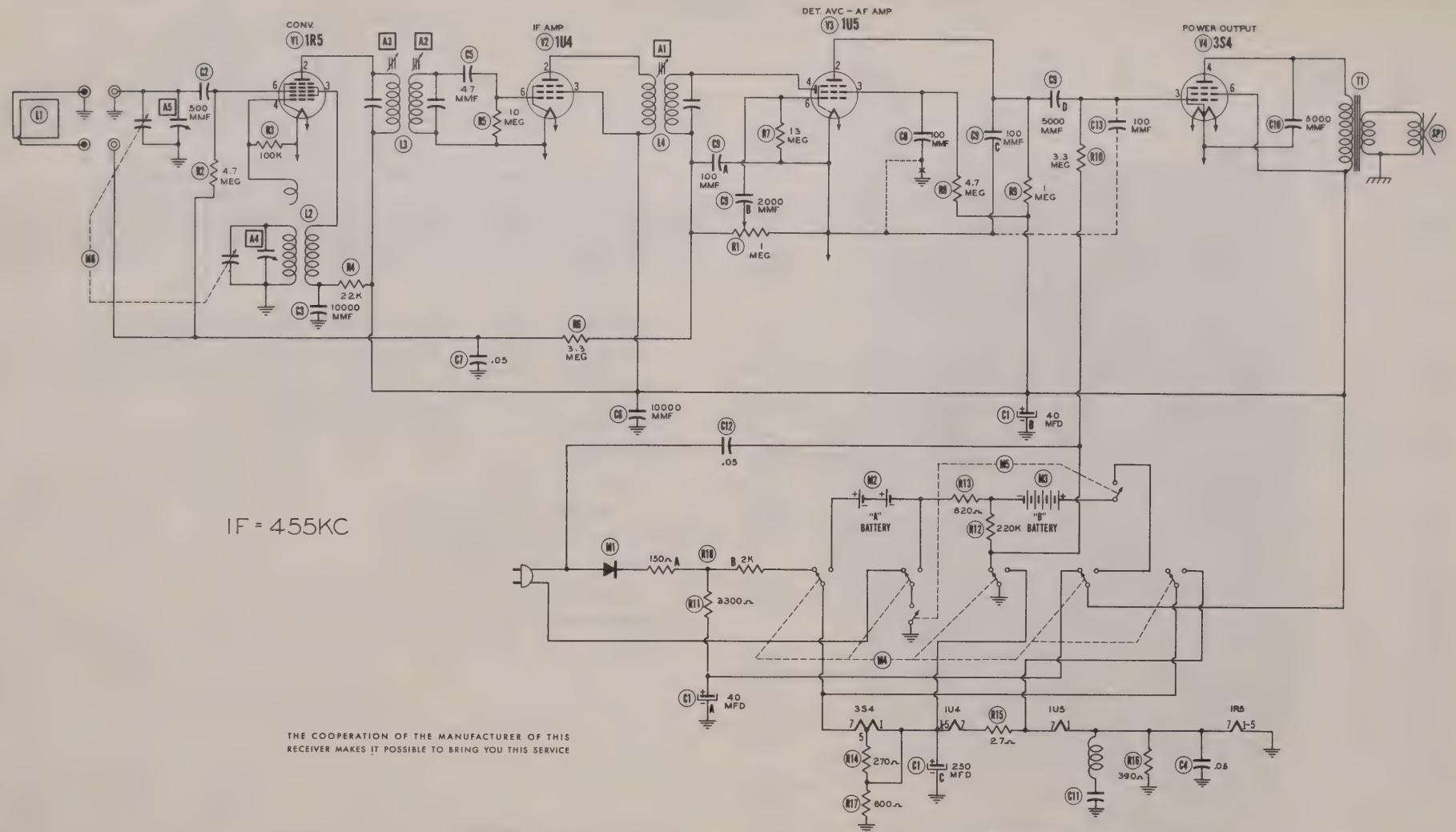
CHASSIS—BOTTOM VIEW



SET 149 FOLDER 8

MOTOROLA MODEL 51M1U

MOTOROLA MODEL 51M1U



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0V	65VDC	36VDC	§-6.5VDC	0V	-.3VDC	1.1VDC
V 2	1U4	4.7VDC	65VDC	65VDC	0V	4.7VDC	.1VDC	3.5VDC
V 3	1U5	1.1VDC	17VDC	12VDC	.2VDC	0V	0V	2.3VDC
V 4	3S4	4.7VDC	50VDC	0V	65VDC	6VDC	60VDC	7.2VDC

ALL VOLTAGE MEASUREMENTS TAKEN IN AC/DC POSITION.
§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†3.4KΩ	†25KΩ	100KΩ	*	5.7Meg	*
V 2	1U4	*	†3.4KΩ	†3.4KΩ	Inf.	*	10Meg	*
V 3	1U5	*	†1Meg	†4.7Meg	1Meg	Inf.	10Meg	*
V 4	3S4	*	†3.8KΩ	2.2Meg	†3.4KΩ	*	†3.8KΩ	*

† MEASURED FROM OUTPUT OF M1.
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

RAYTHEON MODELS C-2001A, C-2002A, C-2006A (Ch. 20AY21)

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MODEL C-2001A

RAYTHEON MODELS C-2001A, C-2002A, C-2006A (Ch. 20AY21)

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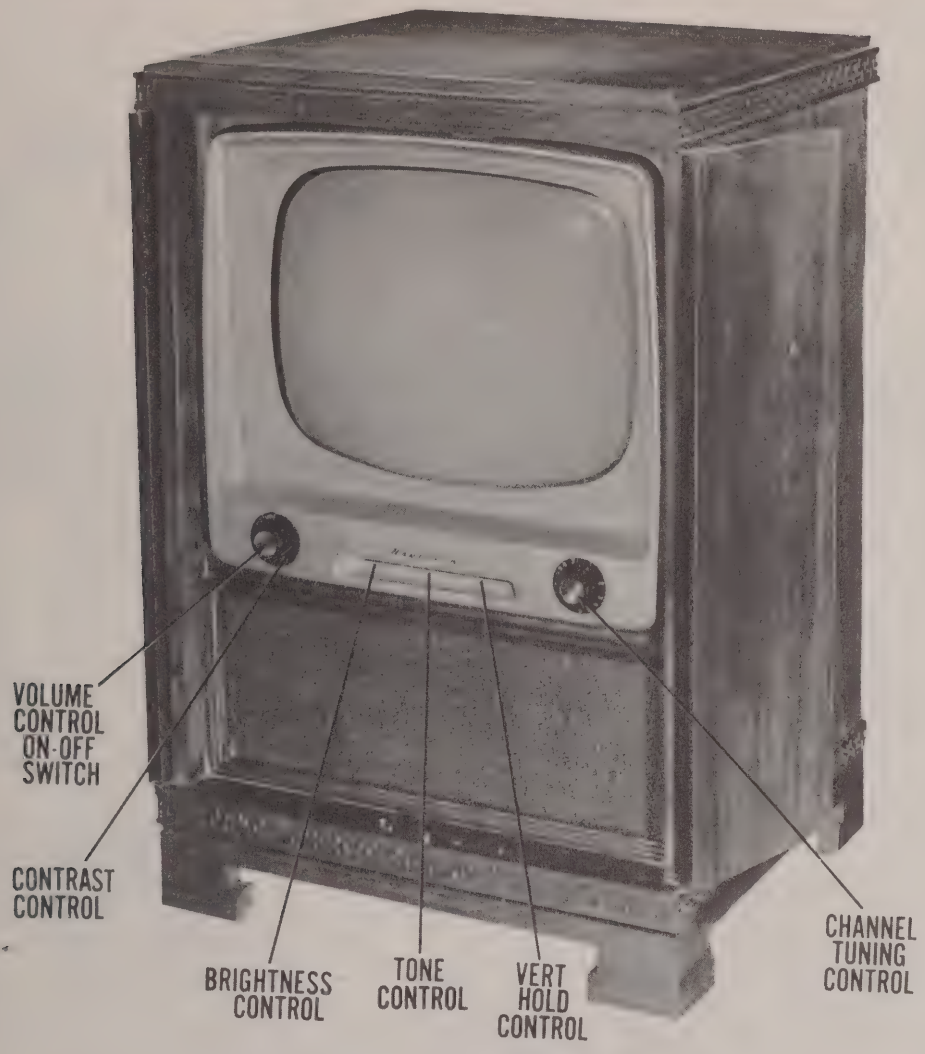
DATE 11-51 SET 149 FOLDER 9

RAYTHEON MODELS C-2001A, C-2002A, C-2006A (Ch. 20AY21)



RAYTHEON MODELS C-2001A, C-2002A, C-2006A (Ch. 20AY21)

RAYTHEON MODEL C-2001A

TRADE NAME	Raytheon, Models C-2001A, C-2002A, C-2006A (Ch. 20AY21)
MANUFACTURER	Belmont Radio Corp., 5921 W. Dickens Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty-five
POWER SUPPLY	110-120 Volts AC 60 Cycle — RATING 2.1 Amp. at 115 volts AC
TUNING RANGE	CHANNELS 2 thru 13

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 10
Horizontal Sweep Circuit Adjustments 10
Parts List and Description 11, 12, 13, 14
Photographs
- Cabinet - Rear View 10
- Capacitor and Alignment Identification 4, 9
- Chassis - Top View 3
- RF Tuner 7
- Resistor and Inductor Identification 15, 16

Schematic 2
Tube Placement Charts 5
Voltage and Resistance Measurements 8

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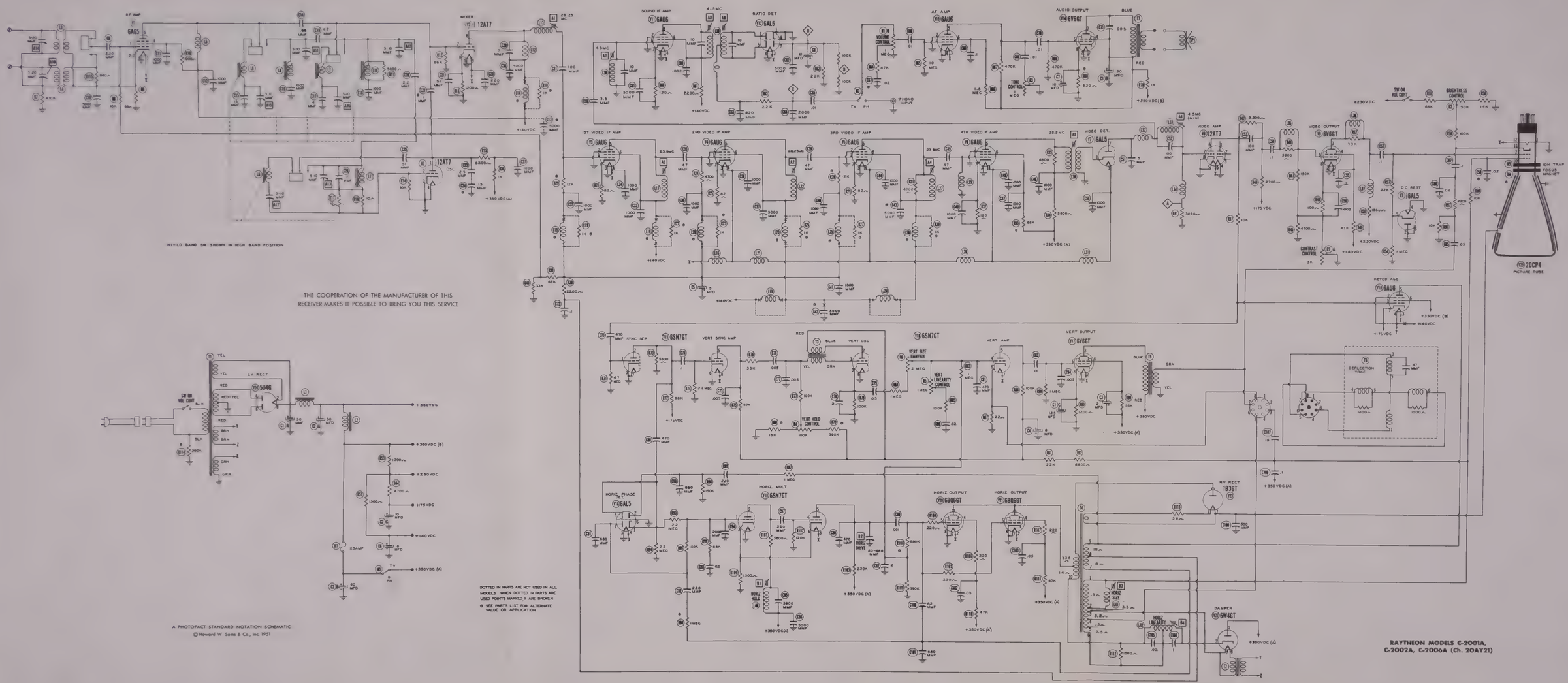
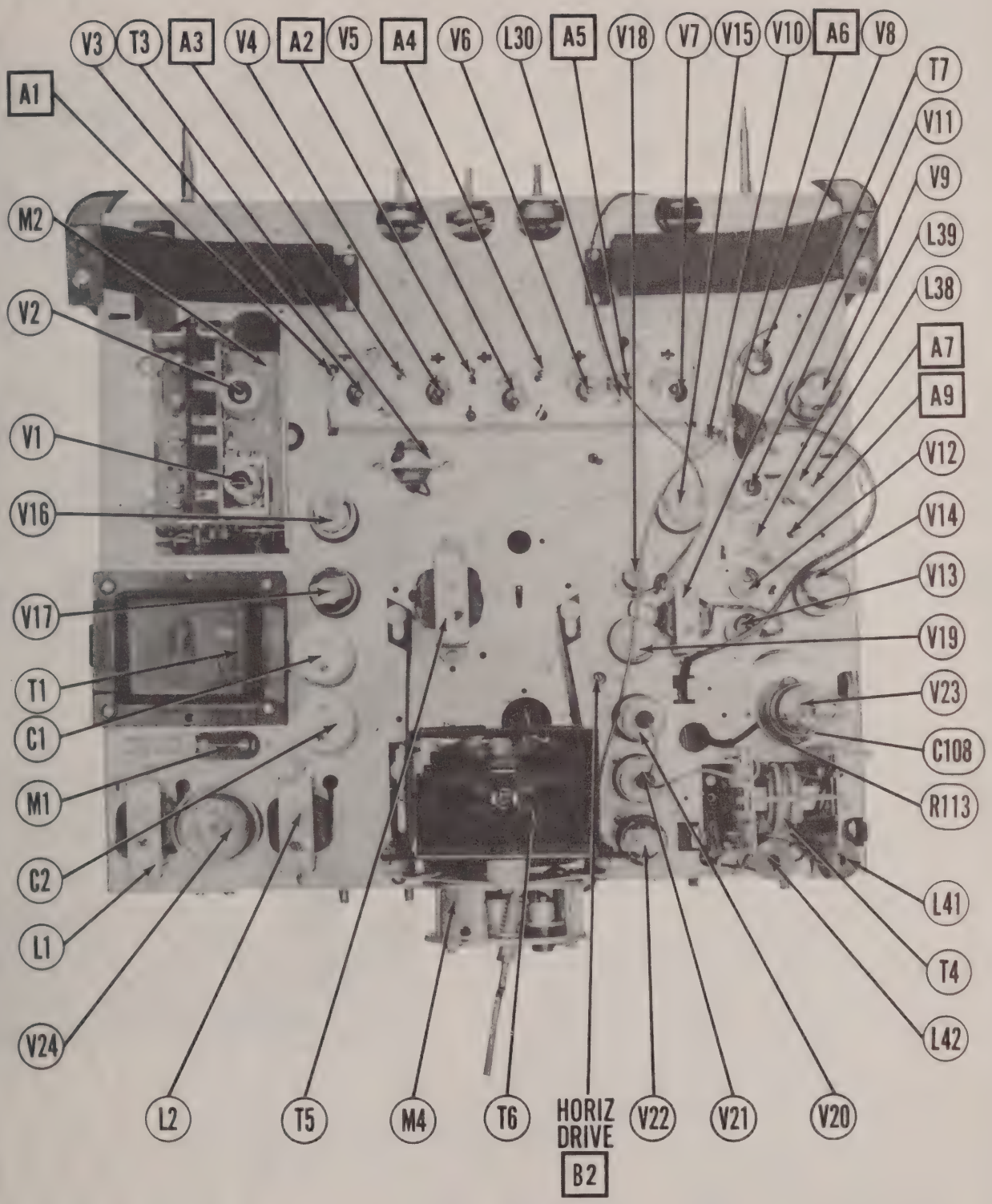
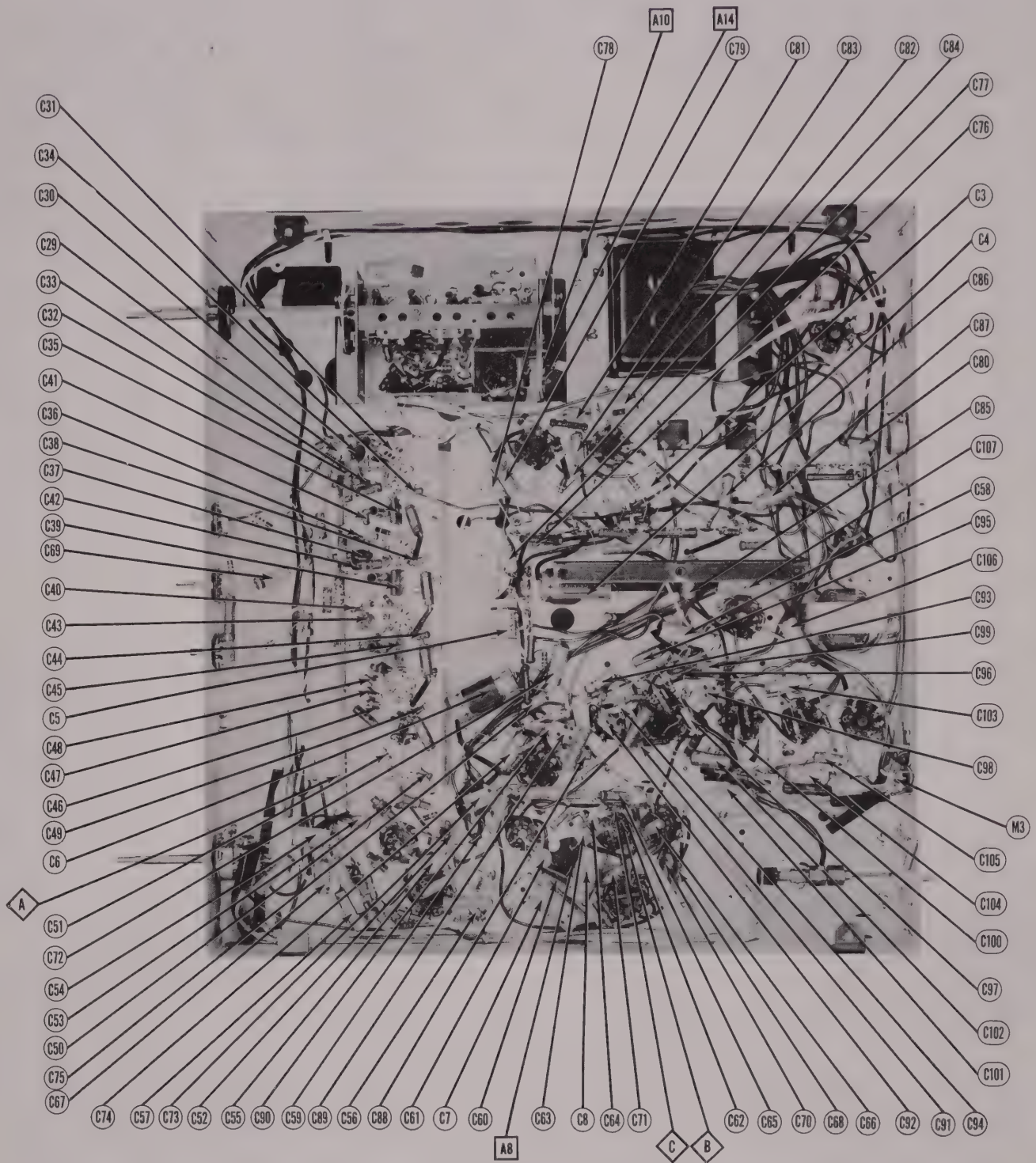


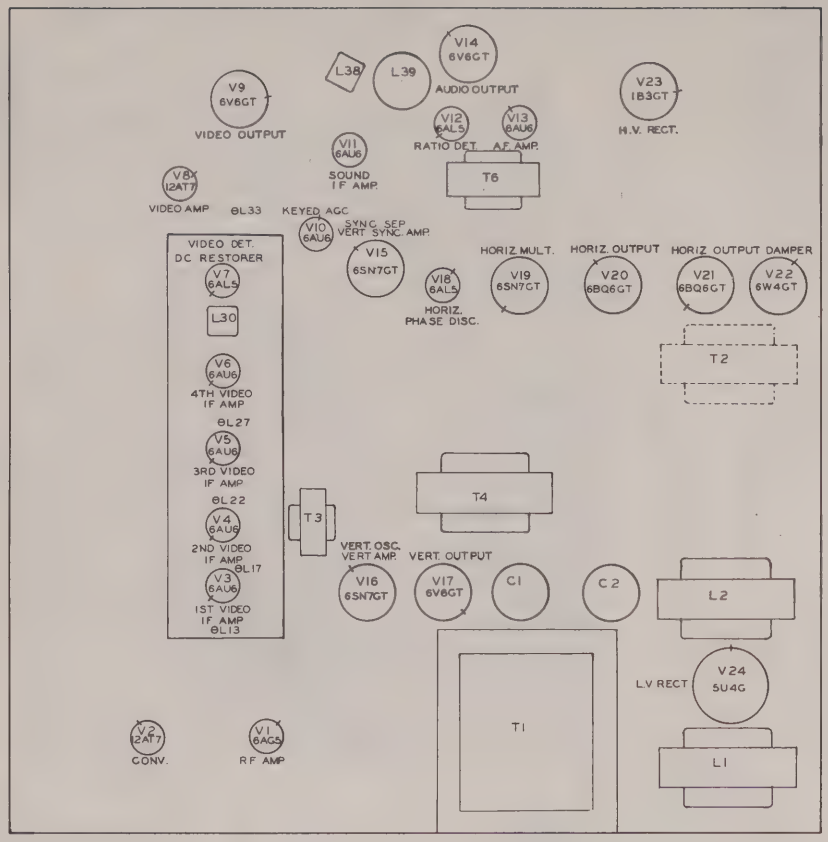
RAYTHEON MODELS C-2001A, C-2002A, C-2006A (Ch. 20AY21)



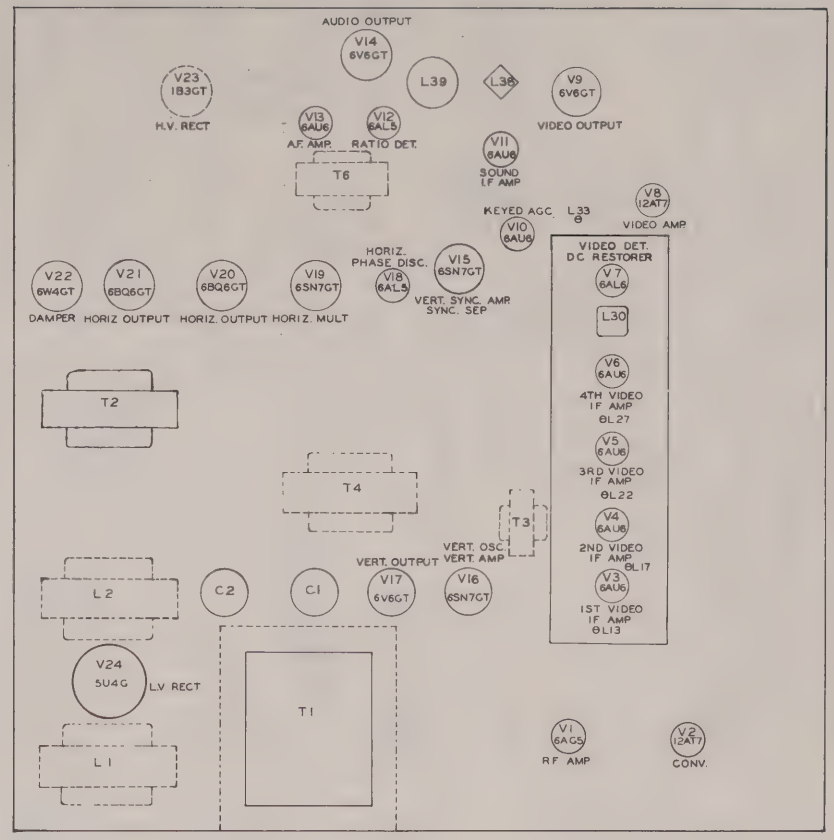
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW - CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

RAYTHEON MODELS C-2001A, C-2002A, C-2006A (Ch. 20AV21)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Turn the tuner to any high band channel which causes no interference.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube, (V2). Low side to chassis.	Not used	26.25 (unmod.)	Any high channel (see note above)	USE VTVM DC probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	"	23.9MC	"	"	A3, A4	"
3.	"	"	"	25.5MC	"	"	A5	"
4.	"	"	25MC (10MC SWP)	23.65MC 26.75	"	Vert. Amp. thru 10KΩ to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary adjust A5 for proper response. If proper response cannot be obtained by adjusting A5 repeat entire alignment.

4.5 MC TRAP ADJUSTMENTS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD.	High side to pin 7, (plate) of 6AL5, (V7). Low side to chassis.	Not used	4.5MC (400% Mod.)	Any	Vert. Amp. to pin 2 of picture tube. Low side to chassis.	A6	Adjust for MINIMUM 400% indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to pin 7, (plate) of 6AL5, (V7). Low side to chassis.	4.5MC (unmod.)	Any high channel	DC probe to Point (B). Common to chassis.	A7, A8	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.001MFD.	High side to pin 7, (plate) of 6AL5, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any high channel.	Vert. Amp. to Point (B). Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C8. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A9	Reconnect capacitor C8. Adjust A9 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Pre-set the trimmer capacitors as shown in figure 4.
Turn the tuner shaft to the top of its stroke in low band position.
Adjust all coil cores so the core projects 1.6 inches above the coil mounting strip.
Turn the core of L11 (low band oscillator), an additional four turns out of the coil.

LOW BAND ALIGNMENT

Turn the tuner to channel 6.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminal with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.75MC	6	Vert. Amp. thru 10KΩ to Point (A). Low side to chassis.	A10, A11 A12	Adjust for maximum amplitude of response.
9.	"	"	"	"	"	"	A13	Adjust to place video marker at 50% on response curve as per fig. 5.
10.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Adjust tuner until response curve appears on scope with video marker at 50%. If necessary retouch A11 and A12 for compromise which will give best overall response across the low band channels. If trimmer A11 reaches maximum capacity, Turn L9 core in to coil.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

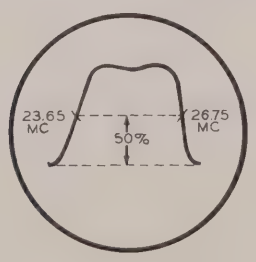


FIG. 1

FIG. 2

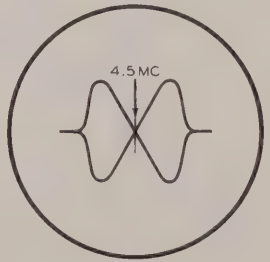


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND ALIGNMENT

Turn the tuning control to channel 13.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminal with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to Point (A). Low side to chassis.	A14, A15 A16	Adjust for maximum amplitude of response curve.
12.	"	"	"	"	"	"	A17	Adjust to place video marker at 50% on response curve as per fig. 5.
13.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Adjust tuner until response curve appears on scope with video marker at 50%. If necessary retouch A15 and A16 for compromise which will give best overall response curve over the high band channels.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			

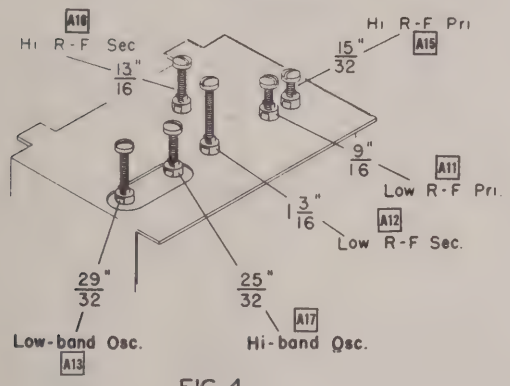
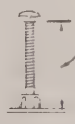


FIG. 4

ALIGNING TRIMMERS



The dimensions shown are approx from the shoulder of screw head to mounting base

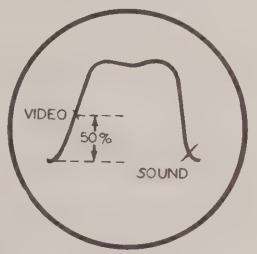
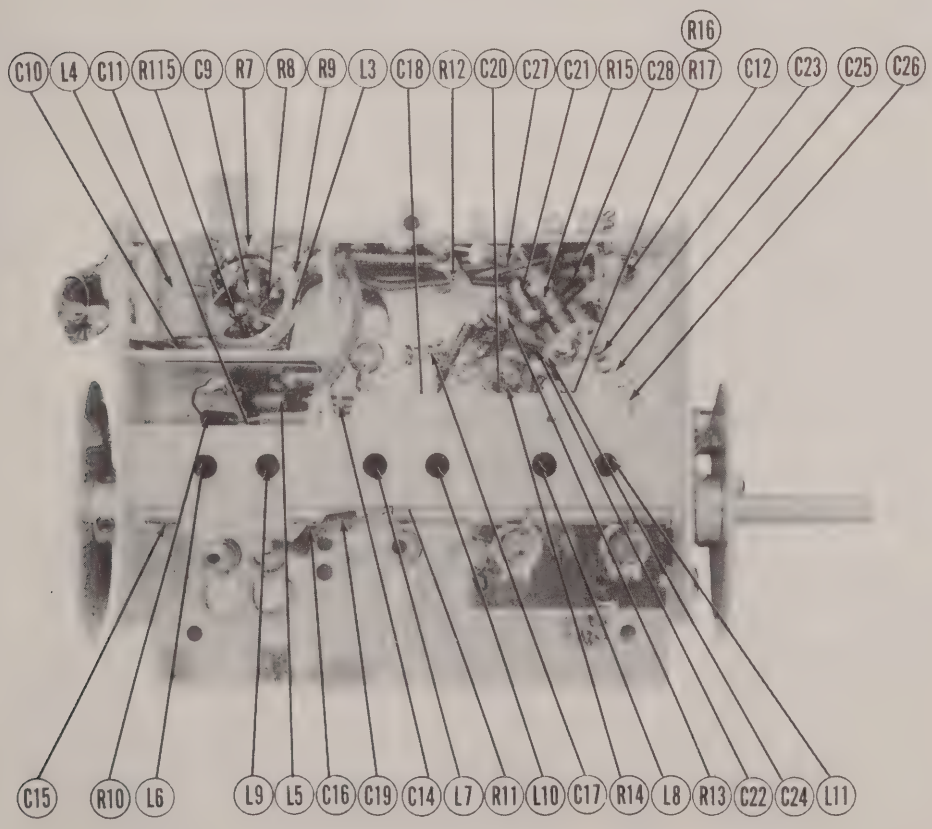


FIG. 5



RF TUNER – BOTTOM VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	0V	.8VDC	6.3VAC	0V	140VDC	135VDC	.8VDC		
V 2	12AT7	165VDC	§▲-3VDC §■-2.2VDC	0V	0V	0V	140VDC	0V	3.5VDC	6.3VAC
V 3	6AU6	0V	0V	0V	6.3VAC	140VDC	140VDC	.8VDC		
V 4	6AU6	0V	0V	0V	6.2VAC	140VDC	140VDC	.8VDC		
V 5	6AU6	0V	0V	0V	6.1VAC	140VDC	140VDC	.8VDC		
V 6	6AU6	0V	0V	0V	6VAC	300VDC	135VDC	1.2VDC		
V 7	6AL5	0V	0V	5.9VAC	0V	.9VDC	0V	-.6VDC		
V 8	12AT7	0V	0V	0V	0V	0V	135VDC	-.7VDC	0V	6.3VAC
V 9	6V6GT	0V	0V	205VDC	100VDC	9VDC	0V	6.3VAC	36VDC	
V 10	6AU6	130VDC	175VDC	¶6.3VAC	¶0V	0V	350VDC	175VDC		
V 11	6AU6	0V	0V	0V	6.3VAC	120VDC	120VDC	1VDC		
V 12	6AL5	0V	-.4VDC	6.3VAC	0V	-.3VDC	0V	-.3VDC		
V 13	6AU6	-.7VDC	0V	6.3VAC	0V	100VDC	35VDC	0V		
V 14	6V6GT	0V	0V	310VDC	320VDC	0V	350VDC	6.3VAC	21VDC	
V 15	6SN7GT	-2.5VDC	16VDC	0V	-1VDC	70VDC	0V	0V	6.3VAC	
V 16	6SN7GT	§0V §38VDC	390VDC	75VDC	§-10VDC §-13VDC	225VDC	.1VDC	6.3VAC	0V	
V 17	6V6GT	0V	6.3VAC	340VDC	250VDC	0V	-25VDC	0V	16VDC	
V 18	6AL5	1.2VDC	-.2VDC	0V	6.3VAC	1.2VDC	0V	0V		
V 19	6SN7GT	§.2VDC	310VDC	12VDC	§-6.4VDC	125VDC	12VDC	0V	6.3VAC	
V 20	6BQ6GT	0V	6.3VAC	-23VDC	110VDC	-23VDC	115VDC	0V	0V	Top Cap *
V 21	6BQ6GT	-23VDC	6.3VAC	115VDC	110VDC	-23VDC	-1.8VDC	0V	0V	Top Cap *
V 22	6W4GT	0V	0V	630VDC	0V	350VDC	0V	650VDC	650VDC	
V 23	1B3GT	* DO NOT MEASURE								Top Cap *
V 24	5U4G	0V	370VDC	0V	340VAC	2.5VAC	340VAC	52VAC	370VDC	
V 25	20CP4	0V	1.5VDC	PIN 10 625VDC	PIN 11 37VDC 165VDC	PIN 12 6.3VAC	H. V. CONNECTOR ** 14.5K.V.			

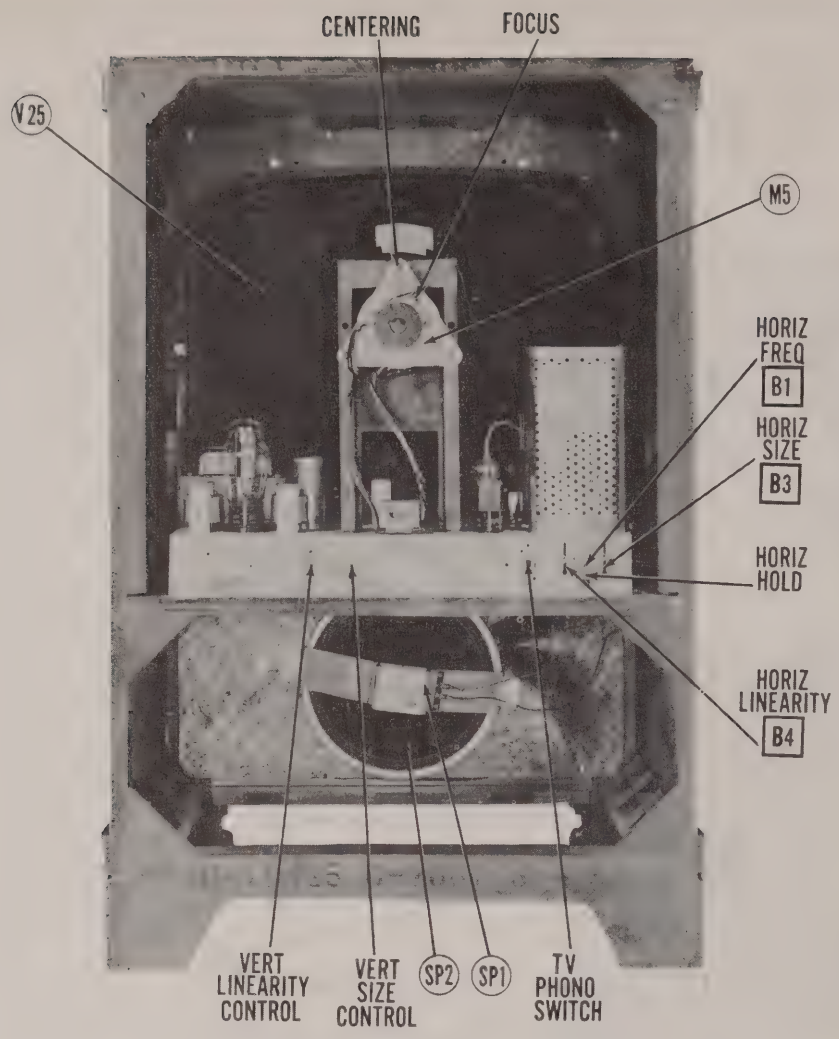
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
ALL MEASUREMENTS TAKEN IN T.V. POSITION ONLY
¶ MEASURED FROM 140VDC LINE
* DO NOT MEASURE
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE
§ TAKEN WITH VACUUM TUBE VOLTMETER
▲ MEASURED IN LOW BAND ■ MEASURED IN HIGH BAND

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	43KΩ	68Ω	.1Ω	0Ω	†2.7KΩ	†3.7KΩ	68Ω		
V 2	12AT7	†9.2KΩ	10KΩ	0Ω	0Ω	0Ω	†2.7KΩ	68KΩ	1.2KΩ	.1Ω
V 3	6AU6	65KΩ	0Ω	0Ω	.1Ω	†2.7KΩ	†2.7KΩ	82Ω		
V 4	6AU6	60KΩ	0Ω	0Ω	.2Ω	†2.7KΩ	†2.7KΩ	82Ω		
V 5	6AU6	65KΩ	0Ω	0Ω	.3Ω	†2.7KΩ	†2.7KΩ	82Ω		
V 6	6AU6	2.5Ω	0Ω	0Ω	.4Ω	†5.6KΩ	†68KΩ	120Ω		
V 7	6AL5	.7Ω	0Ω	.5Ω	0Ω	1Meg	0Ω	3.9KΩ		
V 8	12AT7	Inf.	Inf.	Inf.	0Ω	0Ω	†11KΩ	3.9KΩ	0Ω	.1Ω
V 9	6V6GT	0Ω	0Ω	†3KΩ	†50KΩ	150KΩ	Inf.	.1Ω	200Ω	
V 10	6AU6	†20KΩ	†6KΩ	¶.1Ω	¶0Ω	60KΩ	†75Ω	†6KΩ		
V 11	6AU6	3.2Ω	0Ω	0Ω	.1Ω	†5KΩ	†5KΩ	120Ω		
V 12	6AL5	0Ω	22KΩ	.1Ω	0Ω	Inf.	0Ω	Inf.		
V 13	6AU6	10Meg	0Ω	.1Ω	0Ω	†470KΩ	†1.8Meg	0Ω		
V 14	6V6GT	0Ω	0Ω	†1.5KΩ	†1KΩ	470KΩ	†75Ω	.1Ω	820Ω	
V 15	6SN7GT	4.7Meg	†30KΩ	0Ω	2.2Meg	#75KΩ	0Ω	0Ω	.1Ω	
V 16	6SN7GT	218KΩ 118KΩ	#27KΩ	100KΩ	1.4Meg	#122KΩ	22Ω	.1Ω	0Ω	
V 17	6V6GT	Inf.	.1Ω	†1KΩ	†56KΩ	1Meg	500KΩ	0Ω	900Ω	
V 18	6AL5	2.2Meg	150KΩ	0Ω	.1Ω	2.2Meg	0Ω	4.5Meg		
V 19	6SN7GT	4.4Meg	†5.6KΩ	1.5KΩ	120KΩ	†220KΩ	1.5KΩ	0Ω	.1Ω	
V 20	6BQ6GT	Inf.	.1Ω	1Meg	†47KΩ	1Meg	†47KΩ	0Ω	0Ω	Top Cap #18Ω
V 21	6BQ6GT	1Meg	.1Ω	†47KΩ	†47KΩ	1Meg	500KΩ	0Ω	0Ω	Top Cap #18Ω
V 22	6W4GT	Inf.	Inf.	450KΩ	Inf.	†75Ω	Inf.	#13Ω	#13Ω	
V 23	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #350Ω
V 24	5U4G	Inf.	55KΩ	Inf.	27Ω	470KΩ	25Ω	470KΩ	55KΩ	
V 25	20CP4	0Ω	1Meg	PIN 10 #10KΩ	PIN 11 †180KΩ †110KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
ALL MEASUREMENTS TAKEN IN T.V. POSITION ONLY
† MEASURED FROM PIN 8 OF V24
# MEASURED FROM PIN 3 OF V22
¶ MEASURED FROM 140VDC LINE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold thumbscrew clockwise until it hits the stop, and then two complete turns counter-clockwise. This is mid-position of its range.

Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), counter-clockwise until bright vertical lines appear in the raster. Then turn the trimmer clockwise to one eighth turn past the point where the lines just disappear.

Adjust the horizontal size slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

Since both width and linearity are effected by the drive trimmer, it may be necessary to adjust them alternately to obtain optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove three screws from rear cover. Remove rear cover.
3. Disconnect built in antenna.
4. Disconnect speaker.
5. Remove five metal bolts from chassis. Remove chassis.
6. Remove two phillips head screws from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		BELMONT PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	12AT7	12AT7	9A	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	4th. Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector - DC Restorer	6AL5	6AL5	6BT	
V8	Video Amplifier	12AT7	12AT7	9A	
V9	Video Output	6V6GT	6V6GT	7AC	
V10	Keyed AGC	6AU6	6AU6	7BK	
V11	Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amplifier	6AU6	6AU6	7BK	
V14	Audio Output	6V6GT	6V6GT	7AC	
V15	Sync. Separator-Vert. Sync. Amp.	6SN7GT	6SN7GT	8BD	
V16	Vert. Oscillator-Vert. Amplifier	6SN7GT	6SN7GT	8BD	
V17	Vertical Output	6V6GT	6V6GT	7AC	
V18	Horizontal Phase Discriminator	6AL5	6AL5	6BT	
V19	Horizontal Mult.	6SN7GT	6SN7GT	8BD	
V20	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V21	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V22	Damper	6W4GT	6W4GT	4CG	
V23	HV Rectifier	1B3GT	1B3GT	4CG	
V24	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	BELMONT PART No.	SYLVANIA PART No.	THOMAS PART No.		
V25	20CP4	20CP4A	20CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	BELMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	30	450	A-8C-18487	AFH2-54		UPT409		TVL-2759	▲ Filter
B	30	450		PRS25/100				TVA-1207	■ Audio Output Dec.
C	125	25							▲ Vert. Output Cathode
C2A	30	450	C-8C-17845	AFH3-40		UPT36145		TVL-3790	▲ Filter
B	60	450							■ Filter
C	10	450							▲ Decoupling
C3	2	150	A-8C-19873	PRS150/4		BR245		TVA-1402	Vert. Output Screen
C4	8	450	A-8C-13453	PRS450/8		BR845A		TVA-1704	Vert. Osc. Dec.
C5	5	50	A-8C-19424	PRS150/4		BR550		TVA-1303	AGC Filter
C6	8	450	A-8C-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C7	10	50	A-8C-17183	PRS50/10		BR105		TVA-1304	Audio Output Dec.
C8	10	75	A-8C-19564	PRS150/12		BR1015		TVA-1406	Stabilizing Cap.
C9	220		C-8G-16045	SI220	D6-221		GP1K-221	5GA-T22	RF Coupling
C10	5000		A-8G-13962	BPD-005	DD-502		811-005	5HK-D5	RF Amp. Cathode
C11	1000		C-8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Screen
C12	1000		C-8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Plate
C13	5000		A-8G-13962	BPD-005	DD-502		811-005	5HK-D5	RF Amp. Plate *
C14	.68		A-8G-12495-1		TCZ-.68		NP0K-R68		RF Coupling
C15	15		C-8G-13017		TCZ-15		NP0K-150	5TCC-Q15	Fixed Padder
C16	1000		C-8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	Fixed Padder
C17	4		C-8G-19314				NP0K-040		Fixed Padder
C18	1000		C-8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	Fixed Padder
C19	1.5		A-8G-12495-8	SI1.5NP0	TCZ-1.5		NP0K-1R5		RF Coupling
C20	2.2		A-8G-12495-4	SI2.2NP0	TCZ-2.2		NP0K-2R2		RF Coupling
C21	51		C-8G-11891		TCN-51		N750K-510		Conv. Cathode
C22	1		A-8G-12495-2		TCZ-1		NP0K-010		Osc. Coupling †
C23	2.5		C-8G-19568				N470K-2R5		Fixed Padder
C24	15		C-8G-13017		TCZ-15		NP0K-150	5TCC-Q15	Fixed Trimmer *
C25	51		C-8G-11891		TCN-51		N750K-510		Osc. Feedback
C26	7		C-8G-19572				N470K-070		Fixed Trimmer
C27	1000		C-8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C28	220		C-8G-16045	SI220	D6-221		GP1K-221	5GA-T22	Fil. Bypass
C29	7		C-8G-11790	SI6.8NP0	TCZ-6.8		NP0K-6R8		Fixed Trimmer
C30	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Mixer Plate Dec.
C31	100	500	C-8F3-8	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C32	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C33	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Dec.
C34	1000		C-8G-13201	SI1000	D6-102	1W5D15	GP2L-102	5HK-D1	1st. Video IF Fil.
C35	47	500	C-8F3-109	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C36	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C37	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Dec.
C38	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Fil.
C39	47	500	C-8F3-109	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C40	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C41	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C42	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass *
C43	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Dec.†
C44	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Fil.
C45	47	500	C-8F3-109	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C46	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Plate
C47	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Screen
C48	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Cathode
C49	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Fil.
C50	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Fil.
C51	5		C-8G-12166	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C52	100	500	C-8F15-113	1469-0001		5R5T1		MS-31	Fixed Trimmer

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP.	RATING VOLT	REPLACEMENT DATA BELMONT PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL-DUBILIER PART No	ERIE PART No	SPRAGUE PART No	IDENTIFICATION CODES AND INSTALLATION NOTES
C53	100	500	C-8F-113	1468-0001	D6-101	5W5T1	GP1K-101	1FM-315	Video Coupling
C54	1	400	C-8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C55	2	200	C-8D-17257	P488-22		GT4P2		2TM-P22	Video Amp. Screen
C56	.005	200	C-8D-17785	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Video Amp. Cathode
C57	.1	400	C-8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C58	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Accelerating Anode Dec. ¶
C59	3.3		A-8G-12495-5	S13.3NP0	TCZ-3.3		NP0K-3R3		Sound IF Coupling
C60	.002	600	C-8D-15638	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Sound IF Decoupling
C61	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Cathode
C62	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C63	820	500	C-8F3-124	1464-0008		2R5T8		MS-38	RF Bypass
C64	2000		C-8G-19522	SI2000	D6-202	1W5D2	GP3-333-202	5HK-D2	De-emphasis
C65	.01	200	C-8D-19258	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C66	.01	400	C-8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C67	.02	200		P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp. ¶
C68	.1	400	C-8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	AF Amp. Screen
C69	.01	400	C-8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C70	.01	400	C-8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C71	.005	600	C-8D-19258	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C72	.1	200	C-8D-17259	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C73	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Sync. Coupling
C74	.1	400	C-8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	Sync. Coupling
C75	.005	200	C-8D-17785	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Sync. Amp. Plate
C76	.005	600	C-8D-19258	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Osc. Grid
C77	.005	200	C-8D-17785	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Integrator Net.
C78	.2	200	C-8D-17257	P488-22		GT4P2		2TM-P22	Vert. Osc. Cathode
C79	.05	200	C-8D-14460	P288-05	DF-503	PTE4S5		2TM-S5	Vert. Sweep Coupling
C80	.02	200	C-8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Vert. Discharge
C81	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Vert. Amp. Grid
C82	.2	200	C-8D-17257	P488-22		GT4P2		2TM-P22	Bias Filter
C83	.01	400	C-8D-17270	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Vert. Sweep Coupling
C84	.005	200	C-8D-17785	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Output Grid
C85	.05	400	C-8D-14461	P488-05	DF-503	PTE4S5		4TM-S5	Vert. Sweep Coupling
C86	.02	200	C-8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Integrator Net.
C87	.1	200	C-8D-17259	P288-1	DF-104	PTE4P1		2TM-P1	Vert. Sweep Coupling
C88	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Sync. Coupling
C89	220	500	C-8F3-117	1469-00025		5R5T25			Horiz. Feedback
C90	680	500	C-8F3-123	1479-0007		2R5T7		MS-37	Voltage Divider
C91	680	500	C-8F3-123	1479-0007		2R5T7		MS-37	Voltage Divider
C92	220	500	C-8F3-117	1469-00025		5R5T25			Horiz. Feedback
C93	.02	200	C-8D-17268	P488-02	D6-203	PTE4S2		2TM-S2	AFC Filter
C94	2000		C-8G-16049	SI2000	D6-202	1W5D2	GP2-333-202	5HK-D2	Horiz. MV Grid
C95	3900	500	C-8F11-132	1464-004		1DR5D4			Fixed Trimmer
C96	5000		C-8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C97	220	500	C-8F3-117	1469-00025		5R5T25			Horiz. MV Feedback
C98	470	500	C-8F3-121	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Discharge
C99	.001	600	C-8D-19193	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sweep Coupling
C100	62	1500	C-8G-19299						Horiz. Feedback
C101	680	500	C-8F3-123	1479-0007		2R5T7		MS-37	Voltage Divider
C102	.05	400	C-8D-14461	P488-05	DF-503	PTE4S5		4TM-S5	Horiz. Output Screen
C103	.05	400	C-8D-14461	P488-05	DF-503	PTE4S5		4TM-S5	Horiz. Output Screen
C104	.1	200	C-8D-17259	P288-1	DF-104	PTE4P1		2TM-P1	Damper Filter
C105	.02	200	C-8D-17268	P488-02	DF-203	PTE4S2		2TM-S2	Damper Filter
C106	.1	400	C-8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	Decoupling
C107	.15	200	C-8D-15667	P288-15				2TM-P15	Horiz. Sweep Coupling
C108	500	20000	A-8G-17179	HV-20C	TV3-502				HV Filter

* Not used in all models.
† Some models use 2.2MMF. in this application. (Part # A-8G-12495-4)
‡ Some models use 1000MMF. in this application. (Part # C-8G-13201)
¶ Some models use .01MFD. in this application. (Part # C-8D-18860)

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BELMONT PART No	IRC PART No	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	½	A-10A-18441	Concentrikit B17-U4 #	RTV-218	SBBT-617-S	Contrast Control - Front Volume Control and SW- Tapped at 100KΩ - Rear
B	1Meg	½		B16-137X #			Attach per instructions in Concentrikit
C	Shaft end			E202 #			Attach per instructions in Concentrikit
D	Switch			76-2 #			Brightness Control
R2A	50KΩ	½	A-10B-17764	QU-123	AG-44-S	AN-31	Attach to R2A per instructions
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Tone Control
R3A	1Meg	½	A-10B-19542	QU-137	AG-63-Z	BSK-70	Attach to R3A per instructions
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Vert. Hold Control
R4A	100KΩ	½	A-10B-17275	QU-128	AG-49-S	AN-40	Attach to R4A per instructions
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Vert. Linearity Control
R5A	1Meg	½	A-10B-19296	QU-137	AG-61-S	AN-69	Attach to R5A per instructions
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Vert. Size Control
R6A	2Meg	½	A-10B-19295	QU-139	AG-83-S	AN-75	Attach to R6A per instructions
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	

Additional parts to be used with Concentrikit.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BELMONT PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS † 10% UNLESS OTHERWISE SPECIFIED
R7	470KΩ	20% ½		BTS-470K	Antenna Isolation
R8	10KΩ	½	C-9B1-74	BTS-10K	RF Amp. Grid
R9	68Ω	½	C-9B1-48		RF Amp. Cathode
R10	1000Ω	20% ½	C-9B1-13	BTS-1000	RF Amp. Screen
R11	5600Ω	½	C-9B1-71	BTS-5600	Mixer Grid Coil Shunt
R12	68KΩ	½	C-9B1-84		Mixer Grid Coil Shunt
R13	1200Ω	½	C-9B1-63	BTS-1200	Mixer Cathode
R14	10KΩ	½	C-9B1-74	BTS-10K	Osc. Grid
R15	8200Ω	1	C-9B2-73	BTA-8200	Osc. Plate
R16	10Ω	½	C-9B1-38		Parasitic Suppressor
R17	10Ω	½	C-9B1-38		Parasitic Suppressor
R18	10000Ω	½	C-9B1-62	BTS-1000	Mixer Decoupling - See Note 1
R19	10000Ω	½	C-9B1-62	BTS-1000	AGC Network - See Note 1
R20	12KΩ	½	C-9B1-75	BTS-12K	1st. Video IF Amp. Grid - See Note 2

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BELMONT PART No.	IRC PART No.	IDENTIFICATION CODES
R21	82Ω	½	C-9B1-49	BTS-82	1st. Video IF Amp. Cathode
R22	1000Ω	½	C-9B1-13	BTS-1000	1st. Video IF Amp. Decoupling - See Note 1
R23	1000Ω	½	C-9B1-13	BTS-1000	AGC Network - See Note 1
R24	4700Ω	½	C-9B1-70	BTS-4700	2nd. Video IF Amp. Grid
R25	82Ω	½	C-9B1-49	BTS-82	2nd. Video IF Amp. Cathode
R26	1000Ω	½	C-9B1-13	BTS-1000	2nd. Video IF Amp. Decoupling - See Note 1
R27	1000Ω	½	C-9B1-13	BTS-1000	AGC Network - See Note 1
R28	12KΩ	½	C-9B1-75	BTS-12K	3rd. Video IF Amp. Grid - See Note 2
R29	82Ω	½	C-9B1-49	BTS-82	3rd. Video IF Amp. Cathode
R30	1000Ω	½	C-9B1-13	BTS-1000	3rd. Video IF Amp. Decoupling - See Note 1
R31	4700Ω	½	C-9B1-70	BTS-4700	4th. Video IF Transformer Shunt
R32	120Ω	½	C-9B1-51	BTS-120	4th. Video IF Amp. Cathode
R33	68KΩ	½	C-9B2-84	BTA-68K	4th. Video IF Amp. Screen - See Note 3
R34	5600Ω	1	C-9B1-71	BTA-5600	4th. Video IF Amp. Decoupling
R35	6800Ω	½	C-9B1-72	BTS-6800	5th. Video IF Transformer Shunt
R36	1000Ω	½	C-9B1-62	BTS-1000	Decoupling
R37	10KΩ	½	C-9B1-74	BTS-10K	Keyed AGC Grid
R38	2200Ω	½	C-9B1-66	BTS-2200	AGC Filter
R39	68KΩ	½	C-9B1-84	BTS-68K	AGC Network
R40	33KΩ	½	C-9B1-80	BTS-33K	AGC Network
R41	3900Ω	½	C-9B1-69	BTS-3900	Video Det. Diode Load
R42	2200Ω	½	C-9B1-66	BTS-2200	Video Amp. Plate
R43	2700Ω	1	C-9B1-67	BTA-2700	Video Amp. Plate
R44	4700Ω	1	C-9B2-70	BTA-4700	Decoupling
R45	4700Ω	½	C-9B1-70	BTS-4700	Contrast Control Shunt
R46	5600Ω	½	C-9B1-71	BTS-5600	Video Peaking Coil Shunt
R47	150KΩ	½	C-9B1-88	BTS-150K	Video Output Grid
R48	100Ω	½	C-9B1-50	BW-½-100	Video Output Cathode - Wire Wound
R49	47KΩ	2	C-9B4-82	BTB-47K	Video Output Screen
R50	1800Ω	2	C-9B4-65	BTB-1800	Video Output Plate
R51	15000Ω	10	C-9C14-1101	1 3/4A-1500	Decoupling
R52	33KΩ	½	C-9B1-80	BTS-33K	Video Peaking Coil Shunt
R53	1200Ω	10	C-9C14-1099	1 3/4A-1200	Decoupling
R54	1Meg	½	C-9B1-98	BTS-1Meg	DC Restorer Diode Load
R55	68KΩ	½	C-9B1-84	BTS-68K	Voltage Divider
R56	15KΩ	½	C-9B1-76	BTS-15K	Voltage Divider
R57	22KΩ	½	C-9B1-78	BTS-22K	Picture Tube Grid
R58	100KΩ	½	C-9B1-86	BTS-100K	Picture Tube Cathode
R59	10KΩ	½	C-9B1-74	BTS 10K	Acc. Anode Load
R60	120Ω	½	C-9B1-51	BTS-120	Sound IF Amp. Cathode
R61	2200Ω	½	C-9B1-66	BTS-2200	Sound IF Amp. Decoupling
R62	22KΩ	½	C-9B1-78	BTS-22K	Ratio Det. Diode Load
R63	22KΩ	½	C-9B1-78	BTS-22K	De-emphasis
R64	47KΩ	½	C-9B1-82	BTS 47K	Tone Compensation
R65	10Meg	½	C-9B1-37	BTS-10Meg	AF Amp. Grid
R66	1.8Meg	½	C-9B1-101	BTS-1.8Meg	AF Amp. Screen
R67	470KΩ	½	C-9B1-29	BTS-470K	AF Amp. Plate
R68	470KΩ	½	C-9B1-29	BTS-470K	Output Grid
R69	820Ω	1	C-9B2-61	BTA-820	Output Cathode - See Note 3
R70	1000Ω	2	C-9B4-62	BW-2-1000	Decoupling - Wire Wound
R71	4.7Meg	½	C-9B1-106	BTS-4.7Meg	Sync. Sep. Grid
R72	68KΩ	2	C-9B4-84	BTB-68K	Sync. Sep. Plate
R73	5600Ω	½	C-9B1-71	BTS-5600	Voltage Divider
R74	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Sync. Amp. Grid
R75	47KΩ	2	C-9B4-82	BTB-47K	Sync. Amp. Plate
R76	33KΩ	½	C-9B1-80	BTS-33K	Integrator
R77	100KΩ	½	C-9B1 86	BTS-100K	Vert. Osc. Grid
R78	100KΩ	½	C-9B1-86	BTS-100K	Vert. Osc. Cathode
R79	390KΩ	1	C-9B2-93	BTA-390K	Voltage Divider - See Note 4
R80	18KΩ	½	C-9B1-77	BTS-18K	Voltage Divider - See Note 5
R81	22KΩ	2	C-9B4-78	BTB-22K	Decoupling
R82	6800Ω	1	C-9B2-72	BTA-6800	Decoupling
R83	1Meg	½	C-9B1-98	BTS-1Meg	Bias Network
R84	1Meg	½	C-9B1-98	BTS-1Meg	Voltage Divider
R85	100KΩ	½	C-9B1-86	BTS-100K	Vert. Peaking
R86	100KΩ	½	C-9B1-86	BTS-100K	Vert. Amp. Plate
R87	22Ω	½	C-9B1-42	BW-½-22	Vert. Amp. Cathode
R88	1Meg	½	C-9B1-98	BTS-1Meg	Vert. Output Grid
R89	1200Ω	½	C-9B1-63	BTS-1200	Vert. Output Cathode
R90	56KΩ	½	C-9B1-83	BTS-56K	Vert. Output Screen
R91	10KΩ	½	C-9B1-74	BTS-10K	Vert. Retrace Blanking Network
R92	2200Ω	½	C-9B1-66	BTS-2200	Vert. Retrace Blanking Network
R93	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Horiz. Phase Disc. Diode Load
R94	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Horiz. Phase Disc. Diode Load
R95	150KΩ	½	C-9B1-88	BTS-150K	Horiz. Phase Disc. Diode Load
R96	150KΩ	½	C-9B1-88	BTS-150K	Horiz. Phase Disc. Diode Load
R97	1Meg	½	C-9B1-98	BTS-1Meg	Horiz. Feedback
R98	1Meg	½	C-9B1-98	BTS-1Meg	Horiz. Feedback - See Note 4
R99	68KΩ	½	C-9B1-84	BTS-68K	Horiz. AFC Filter
R100	1500Ω	½	C-9B1-64	BTS-1500	Horiz. MV Cathode
R101	5600Ω	1	C-9B2-71	BTA-5600	Horiz. MV Plate
R102	120KΩ	½	C-9B1-87	BTS-120K	Horiz. MV Grid
R103	220KΩ	½	C-9B1-90	BTS-220K	Horiz. MV Plate
R104	220Ω	½	C-9B1-54		Parasitic Suppressor
R105	220Ω	½	C-9B1-54		Parasitic Suppressor
R106	220Ω	½	C-9B1-54		Parasitic Suppressor
R107	220Ω	½	C-9B1-54		Parasitic Suppressor
R108	680KΩ	½		BTS-680K	Horiz. Output Grid - See Note 6
R109	390KΩ	½	C-9B1-93	BTS-390K	Horiz. Output Grid
R110	47KΩ	2	C-9B4-82	BTB-47K	Horiz. Output Screen
R111	47KΩ	2	C-9B4-82	BTB-47K	Horiz. Output Screen
R112	1500Ω	1	C-9B2-64	BTA-5600	Horiz. Linearity Coil Shunt
R113	5.6Ω	½	C-9C1-1072		HV Rectifier Filament - Wire Wound
R114	390KΩ	1	C-9B2-93	BTA-390K	Isolation - See Note 4
R115	680Ω	½	C-9B1-60	BTS-680	Low Band Antenna Coil Shunt

Note 1 Some models use 2.2Microhenries RF Choke in this application.
Note 2 Some models use series resistors in this application to obtain desired value.
Note 3 Some models use parallel resistors in this application to obtain desired value.
Note 4 Some models use 470KΩ resistor in this application.
Note 5 Some models use 10KΩ resistor in this application.
Note 6 Some models use 560KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA BELMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.1A	650VCT @ .270ADC	5VAC @ 3A	6.3VAC @ 2.1A SEC. 4 6.3VAC @ 9.5A	C-12A-19942 or C-12A-19942-1		P-3070	

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA BELMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T2	6.3VAC @ 1.8A	6.3VAC @ 1.2A			B-12D-19250			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA BELMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T3	160Ω	970Ω	B-12M-18241-1	A-8111 ①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans.
T4	350Ω	15Ω	C-201-19999				Horiz. Output Trans.
	Tap 14Ω	Taps .5Ω 3.8Ω, 7Ω and 7.5Ω SEC. 2 20Ω Tap 10Ω SEC. 3 0Ω					
T4	950Ω	12Ω	B-12C-19849		A-3039 ①		Vert. Output Trans.
T5A	14Ω		C201-19947	DY-8	MDF-70		Horiz. Deflection Coils
B	60Ω						Vert. Deflection Coils

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA BELMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	7KΩ	3.9Ω	450Ω	.5Ω	B-12C-18743-1	A-3878	A-2930	RO-9 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA BELMONT PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	3.9Ω	C18A-19928	10J12	10A4A	
	CONE DIA.	V. C. DIA.				
SP2	9 1/4"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA BELMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.250A	38Ω	1.3Henries	B16A-17959	C-2326 ①	C-2991	TR-3300 ①	① Drill one new mounting hole.
L2	.250A	38Ω	1.3Henries	B16A-17959	C-2326 ①	C-2991	TR-3300 ①	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA BELMONT PART No.	IRC PART No.	NOTES
L3	Ant. Coil	1Ω	.1Ω	B-201-17143		High Band
L4	Ant. Coil	.1Ω	.1Ω			Low Band
L5	Plate Choke	.7Ω		A-16A-17128		
L6	RF Coil	.1Ω		B-13E-17140		High Band
L7	Mixer Grid Coil	.1Ω		B-13E-17140		High Band
L8	Osc. Coil	0Ω		B-13E-17140		High Band
L9	RF Coil	.1Ω		B-13E-12046		Low Band
L10	Mixer Grid Coil	.1Ω		B-13E-12046		Low Band
L11	Osc. Coil	.1Ω		B-13D-12155		Low Band
L12	Plate Choke	10Ω		A-16A-18025		
L13	1st. Video IF	.2Ω		B-13M-19521		
L14	RF Choke	1.8Ω		A-16A-1867	CLA	2.2 Microhenries (Used in lieu of R18)
L15	RF Choke	1.8Ω		A-16A-1867	CLA	2.2 Microhenries (Used in lieu of R19)
L16	Fil. Choke	.1Ω		A-16A-17937		
L17	2nd. Video IF	.1Ω		A-201-15612		
L18	RF Choke	1.8Ω		A-16A-1867	CLA	2.2 Microhenries (Used in lieu of R22)
L19	RF Choke	1.8Ω		A-16A-1867	CLA	2.2 Microhenries
L20	RF Choke	1.8Ω		A-16A-1867	CLA	2.2 Microhenries (Used in lieu of R23)
L21	Fil. Choke	.1Ω		A-16A-17937		
L22	3rd. Video IF	.1Ω		A-201-15612		
L23	RF Choke	1.8Ω		A-16A-1867	CLA	2.2 Microhenries (Used in lieu of R26)
L24	RF Choke	1.8Ω		A-16A-1867	CLA	2.2 Microhenries
L25	RF Choke	1.8Ω		A-16A-1867	CLA	2.2 Microhenries (Used in lieu of R27)
L26	Fil. Choke	.1Ω		A-16A-17937		

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) CONT.

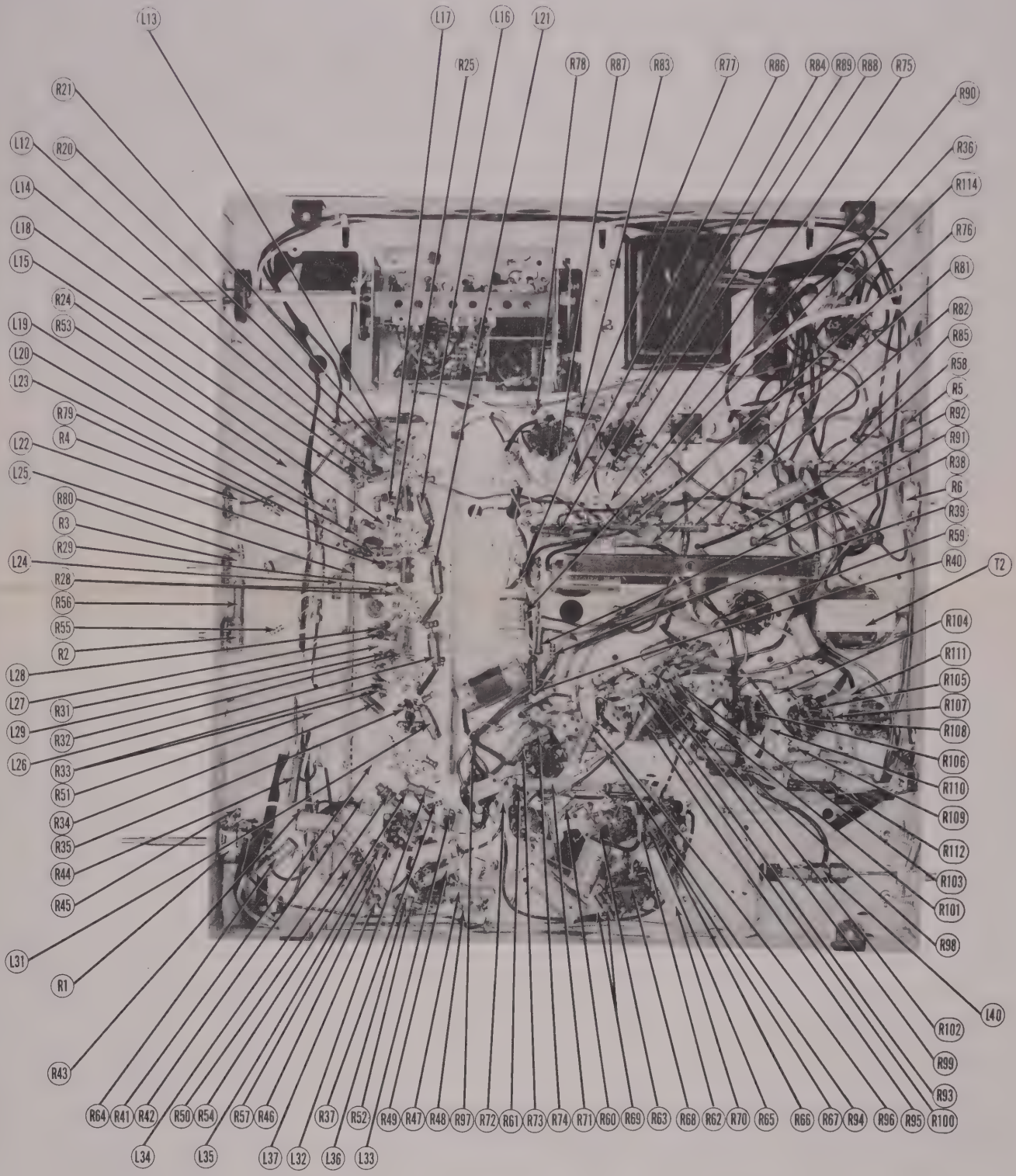
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	BELMONT PART No.	IRC PART No.	
L27	4th. Video IF	.1Ω		A-201-15612		
L28	RF Choke	1.8Ω		A-16A-1867	CLA	2.2 Microhenries (Used in lieu of R30)
L29	RF Choke	2Ω		A-201-15608		
L30	5th. Video IF	.7Ω	.7Ω	B-13B-19958		
L31	Fil. Choke	.1Ω		A-16A-17937		
L32	Peaking	7.5Ω		A-16A-19364	83	83 Microhenries
L33	4.5MC Trap	2.5Ω		A-201-19458		
L34	Peaking	25Ω		A-16A-19365	41	410 Microhenries
L35	Peaking	5Ω		A-16A-20021		130 Microhenries
L36	Peaking	5.8Ω		A-16A-20020		155 Microhenries
L37	Peaking	7Ω		A-16A-19485		240 Microhenries
L38	Sound IF	3.4Ω		B-13A-19514		
L39	Ratio Det. Trans.	4Ω	.8Ω	B-13M-19643		Tap .8Ω
L40	Horiz. Osc.	72Ω		A-13D-19540		Tap .8Ω
L41	Horiz. Size	.2Ω		A-13M-18233		
L42	Horiz. Lin.	5.2Ω		B-13M-20002		Tap 3.5Ω

FUSES

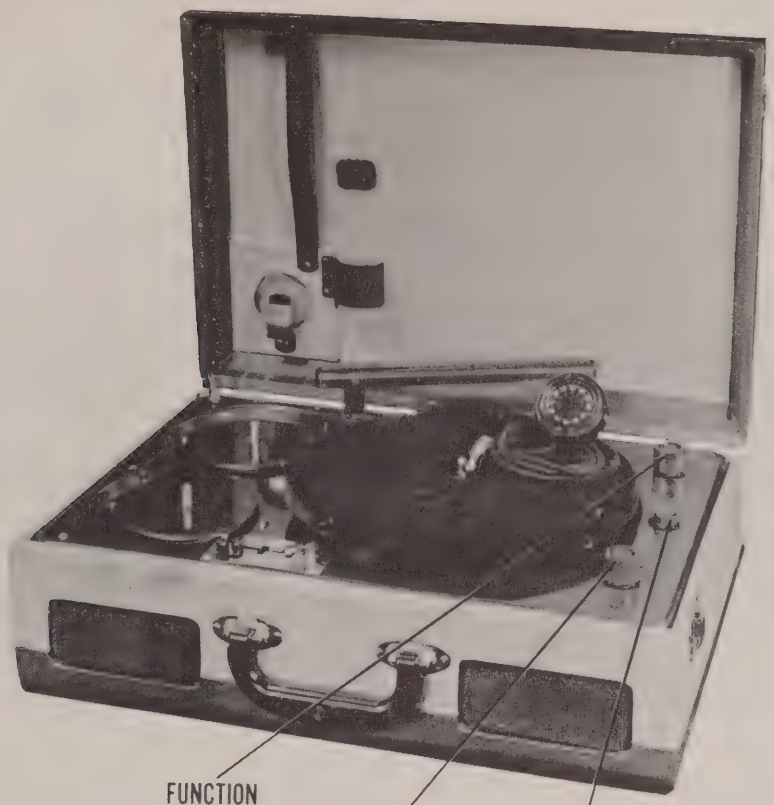
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			BELMONT PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Slo Blo	.250	A46B-18362	A55F-18024	313.250	357001	

MISCELLANEOUS

ITEM No.	PART NAME	BELMONT PART No.	NOTES
M2	RF Tuner		
M3	Switch	A-20F-12108	TV-Phono
M4	Focus Magnet	B-55P-19836	Not used on all models
M5	Ion Trap	A-16M-19906	
B2	Trimmer	A-8E-18508	Horiz. Drive 80-480MMF.
	Knob	B-5B-19949-76	Channel Selector (Models C-2001A, C-2006A)
	Knob	B-5B-19949-56	Channel Selector (Model C-2002A)
	Knob	B-5B-19948-76	Fine Tuning (Models C-2001A, C-2006A)
	Knob	B-5B-19948-56	Fine Tuning (Model C-2002A)
	Knob	B-5B-19951-76	Contrast (Models C-2001A, C-2006A)
	Knob	B-5B-19951-56	Contrast (Model C-2002A)
	Knob	B-5B-19950-76	Off/On Volume (Models C-2001A, C-2006A)
	Knob	B-5B-19950-56	Off/On Volume (Model C-2002A)
	Knob	B-5B-19510-29	Star (For brightness, tone, vert. hold)



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



TRADE NAME	Recordio, Model 1B10
MANUFACTURER	Wilcox-Gay corp., Charlotte, Michigan
TYPE SET	AC Operated Tape Recorder
TUBES (FOUR)	Types 6SJ7 Bias Osc.-Pre-Amp., 12AX7 AF Amp., 6AQ5 Bias Amp.-Power Output, 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING .675 Amp. at 117 Volts AC

RECORDIO
MODEL 1B10

RECORDIO
MODEL 1B10

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PARTS LIST AND DESCRIPTIONS

RECORDIO MODEL 1B10

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WILCOX-GAY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Bias Oscillator-Pre-Amplifier	6SJ7	6SJ7	8N	
V2	AF Amplifier	12AX7	12AX7	9A	
V3	Bias Amplifier-Power Output	6AQ5	6AQ5	7BZ	
V4	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WILCOX-GAY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	250		AFH3-8		UP3325C			■ Filter
B	30	250							▲ Filter
C	30	25							Output Cathode
C2A	10	250				EDL2225C		TVA-3716	Decoupling
B	10	250							Decoupling
C	20	25							AF Amp. Cathode
C3	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	Audio Coupling
C4	1000	500		1468-0001	D6-102	1W5D1	GP2L-102	1FM-21	Audio Coupling
C5	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Osc. Coupling
C6	2000	500		1467-002	D6-202	1W5D2	GP2-333-202	1FM-22	Fixed Trimmer
C7	470	500		1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Tone Comp.
C8	1000	500		1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Tone Comp.
C9	1000	500		1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Tone Comp.
C10	1000	500		1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Audio Coupling
C11	.01	400		P488-01	D6-102	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C12	.01	400		P488-01	D6-102	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C13	.01	400		P488-01	D6-102	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C14	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C15	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C16	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Indicator Coupling
C17	220	500		1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	Indicator Filter
C18	220	500		5W5T25	D6-221	5W5T25	GP2K-221	1FM-325	Tone Comp.
C19	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter
C20	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter

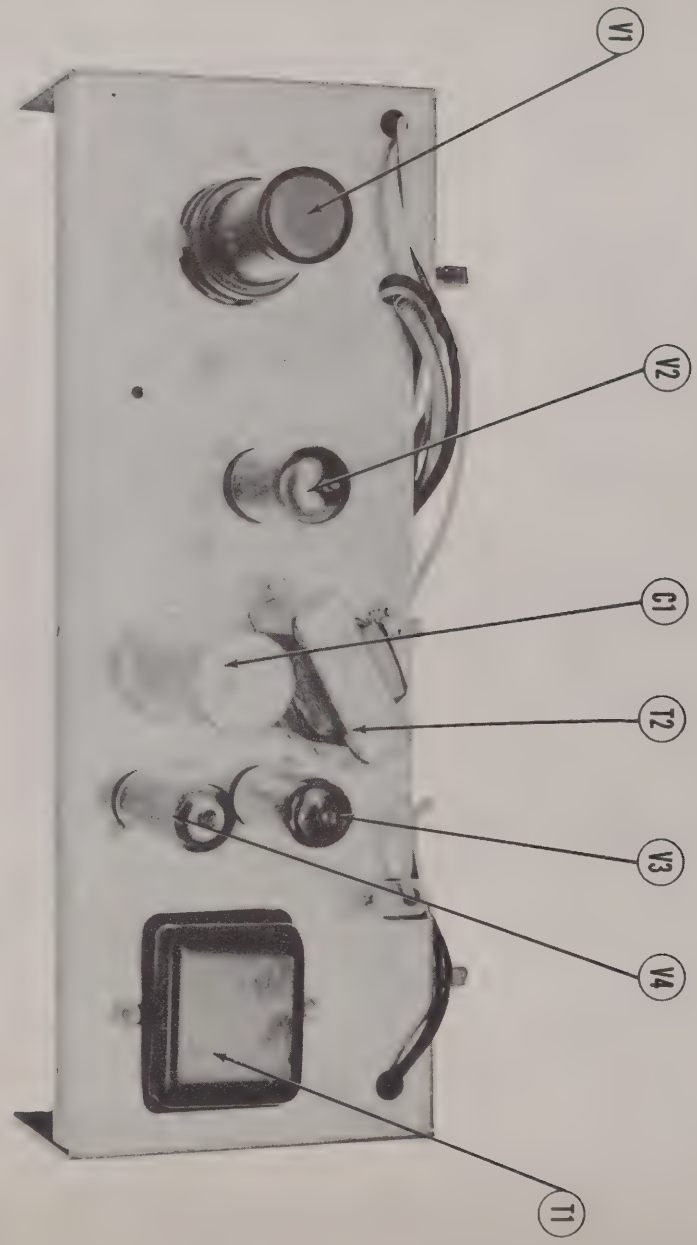
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WILCOX-GAY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	19-2194-1	Q11-133	AG-58-S	B-59-S	Volume Control
B	Switch		Not Req.	76-1	SWB	Not req.	Attach to R1A per instructions
C	Shaft		Not Req.	Not req.	FS-3	Not req.	Attach to R1A per instructions
R2A	250 KΩ	½	19-2190-2		AG-55-S	B-52	Tone Control
B	Shaft		Not req.		FS-3	Not req.	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WILCOX-GAY PART No.	IRC PART No.	IDENTIFICATION CODES
R3	1Meg	½		BTS-1Meg	Bias Osc.-Pre-Amp. Grid - See Note 1
R4	1000Ω	½		BTS-1000	Bias Osc.-Pre-Amp. Cathode
R5	110KΩ	½		BTS-120K	Bias Osc.-Pre-Amp. Plate - See Note 2
R6	33KΩ	½		BTS-33K	Pre-Amp. Screen
R7	470KΩ	½		BTS-470K	Voltage Divider
R8	100KΩ	½		BTS-100K	Tone Compensation
R9	100KΩ	½		BTS-100K	Tone Compensation
R10	100KΩ	½		BTS-100K	Tone Compensation
R11	470KΩ	½		BTS-470K	AF Amp. Grid
R12	2200Ω	½		BTS-2200	AF Amp. Cathode
R13	100KΩ	½		BTS-100K	AF Amp. Plate
R14	33KΩ	½		BTS-33K	Decoupling
R15	470KΩ	½		BTS-470K	Tone Compensation
R16	10Meg	½		BTS-10Meg	AF Amp. Grid
R17	220KΩ	½		BTS-220K	AF Amp. Plate

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R18	50KΩ	½		BTS-47K	Feedback
R19	470KΩ	½		BTS-470K	Bias Amp.-Output Grid
R20	470Ω	1		BTA-470	Bias Amp.-Output Cathode
R21	1.5Meg	½		BTS-1.5Meg	Feedback
R22	10KΩ	½		BTS-10K	Decoupling
R23	1.5Meg	½		BTS-1.5Meg	Indicating Network
R24	470KΩ	½		BTS-470K	Indicating Network
R25	220KΩ	½		BTS-220K	Indicating Network
R26	1000Ω	1		BTA-1000	Filter
R27	220KΩ	½		BTS-220K	Tone Compensation

Note 1 Some models use 1.5MegΩ in this application.
Note 2 Some models use 130KΩ in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	WILCOX-GAY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .675A	420VCT .035ADC	6.3VAC @ 2A			P-6348	P-3047	PV-60 ①

① Drill new mounting holes if necessary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Wilcox-Gay PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5KΩ	3.4Ω	350Ω	.9Ω	81-2106-1	A-3877	A-2930	RO-9 ②	② Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	WILCOX-GAY PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.4Ω	64-2098	46J6	46A1	
	CONE DIA.	V. C. A.				
SP2	4"X6"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	WILCOX-GAY PART No.		
L1	Bias Osc. Coil	40Ω				

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	WILCOX-GAY PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		PT		W61B	A62A	12	O-3 or S-3	

SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

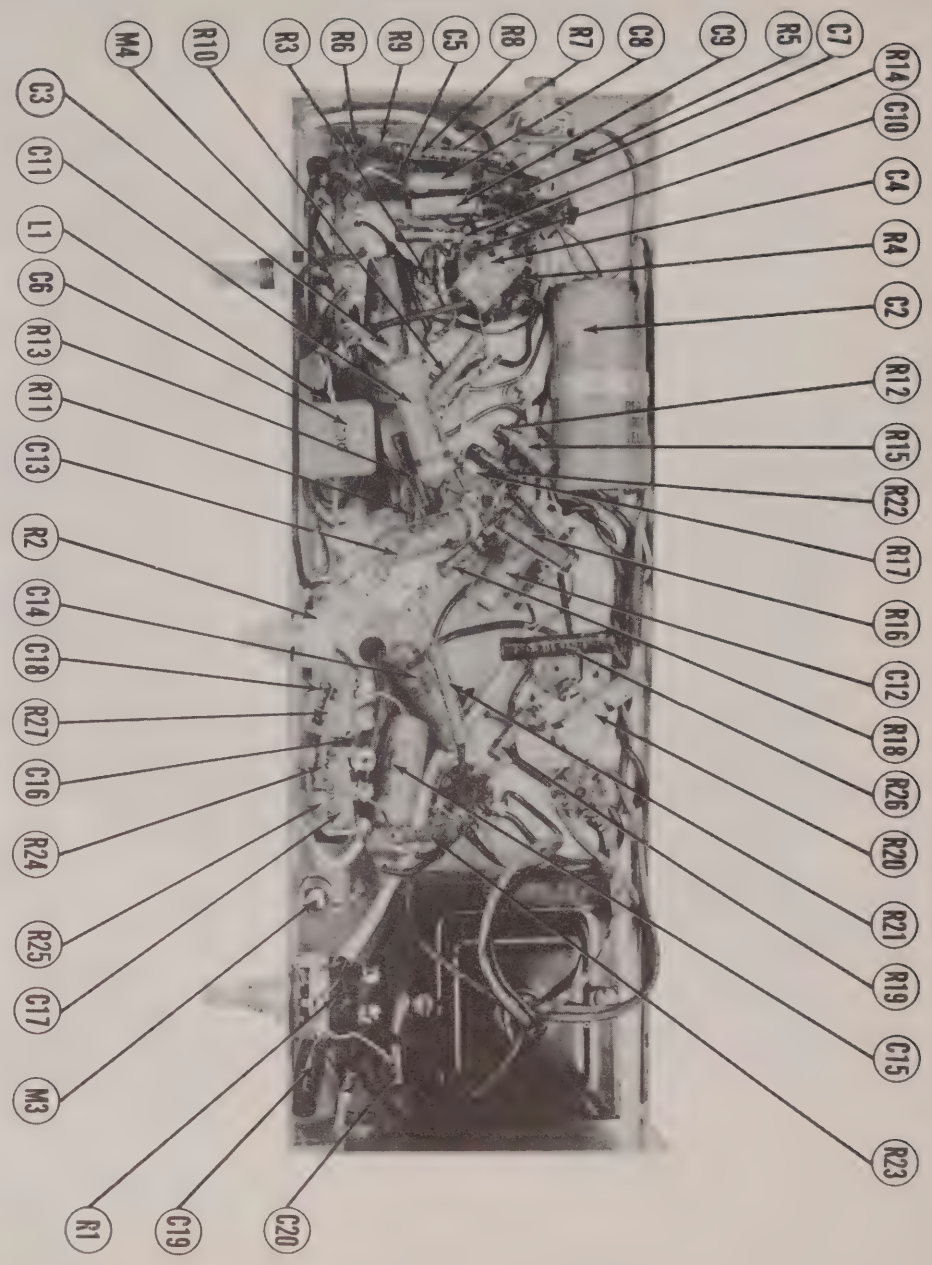
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	WILCOX-GAY PART No.	WALCO PART No.	
M2		W-30A or W-30S	

MISCELLANEOUS

ITEM No.	PART NAME	WILCOX-GAY PART No.	NOTES
M3	Neon Bulb		Type NE51
M4	Switch		Function

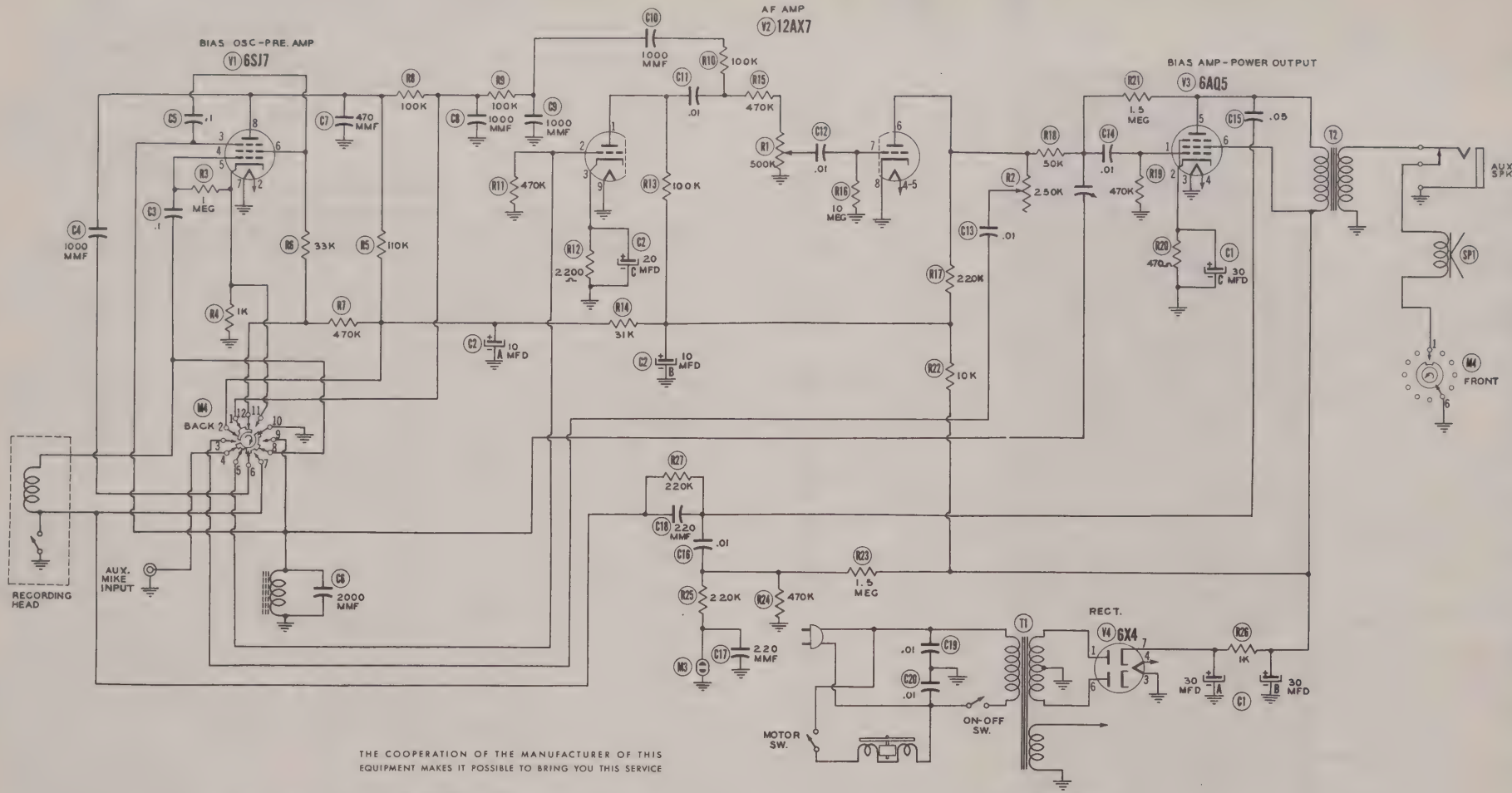
CHASSIS—BOTTOM VIEW



SET 149 FOLDER 10

RECORDIO MODEL 1B10

RECORDIO MODEL 1B10



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6SJ7	0V	6.3VAC	0V	.8VDC	4VDC	90VDC	0V	43VDC	
V 2	12AX7	105VDC	0V	1.2VDC	6.3VAC	6.3VAC	85VDC	-.4VDC	0V	0V
V 3	6AQ5	0V	12VDC	0V	6.3VAC	200VDC	205VDC	0V		
V 4	6X4	210VAC	0V	0V	6.3VAC	0V	210VAC	235VDC		

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6SJ7	0Ω	.3Ω	40Ω	1Meg	1KΩ	†74KΩ	0Ω	†150KΩ	
V 2	12AX7	†110KΩ	470KΩ	2.2KΩ	.3Ω	.3Ω	†230KΩ	10Meg	0Ω	0Ω
V 3	6AQ5	470KΩ	470Ω	0Ω	.3Ω	†1.3KΩ	†1KΩ	470KΩ		
V 4	6X4	245Ω	Inf.	0Ω	.3Ω	Inf.	255Ω	45KΩ		

ALL MEASUREMENTS TAKEN IN RECORD POSITION
† MEASURED FROM PIN 7 OF V4

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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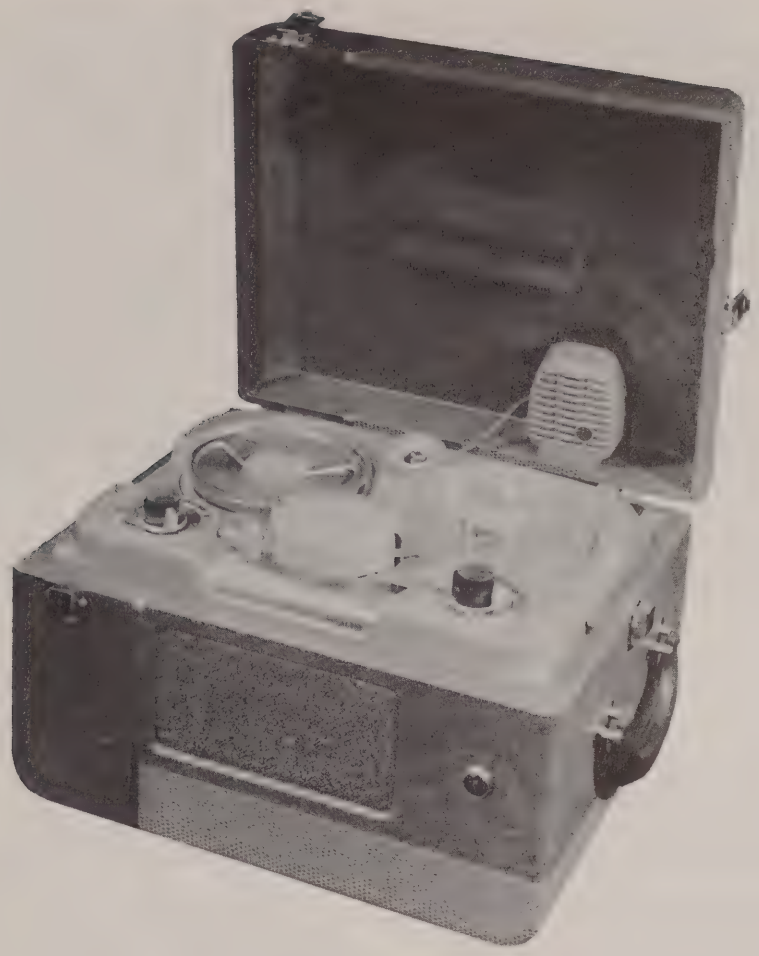
149-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

REVERE
MODEL T-100



REVERE
MODEL T-100

GENERAL INFORMATION

The Revere Model T-100 Magnetic Recorder is designed to record on the standard width tape (.250"), at a slow speed of 3.75" per second (two tracks instead of one), which gives the listener one hour of recording. This two-way utilization of recording eliminates the necessity of rewinding.

This unit incorporates a "Fast-Forward" and "Fast-Rewind," which, with the help of the "Time Footage Indicator," enables the listener to locate the desired portion of the recording tape in a few seconds.

A small diameter capstan attached to a balanced flywheel, with the use of a rubber pinch roller, provides a constant drive speed for the tape.

Power Supply is 105 to 120 volts, 60 Cycles, A. C.

Rewind time is approximately one minute.

Manufactured by:

Revere Camera Company
Chicago 16, Illinois

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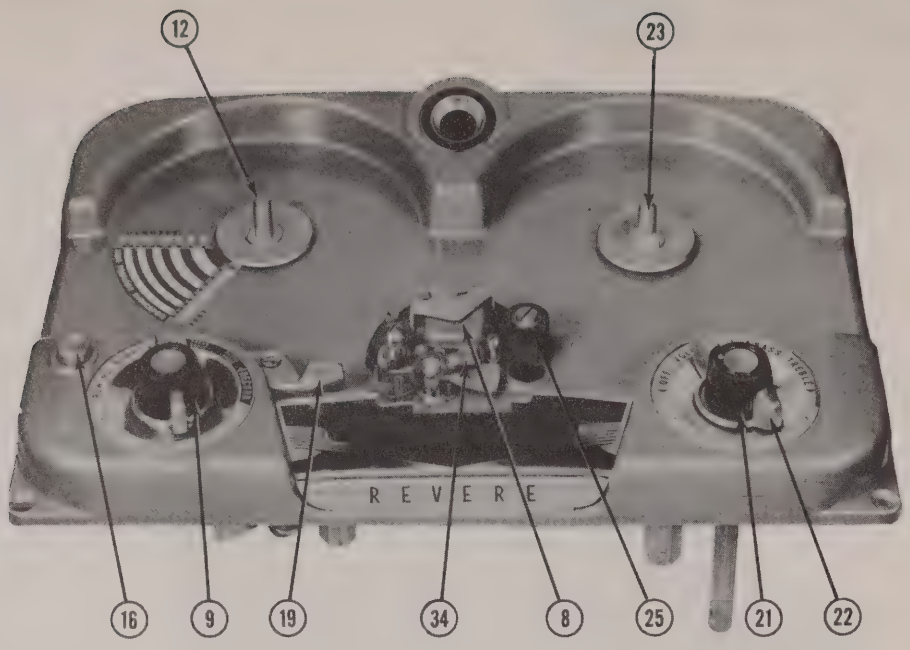


Figure 2

OPERATING INSTRUCTIONS

Threading of Tape -

1. Place a full reel of tape on the left-hand reel shaft and turntable (12). Be sure the dull side of the tape is facing inward and that the tape unwinds from the spool in a counterclockwise direction.

2. Place an empty reel on the right-hand reel shaft and turntable (22).

3. Thread tape straight through the slot in the head covers. Be sure the dull-coated side is facing the recording head.

4. Thread the tape in the slot in the empty reel; then rotate the reel, by hand, several turns.

Record Safety Button -

The record safety button (16), immediately to the left of the function switch (9), prevents accidental erasure of a recording. The function switch cannot be turned to the "Record" position until the safety button is depressed.

Recording Level Indicator -

The recording level indicator is a dual-element neon lamp which indicates the proper recording level. Proper recording level is reached when one-half of the lamp flashes intermittently. An overloaded condition exists when both sides of the lamp flash. If both sides flash, the recording will be distorted; if neither side flashes, it may be difficult to obtain desired volume in playback, and noise level will be higher.

To Make a Recording from Phonograph -

1. Any standard crystal or magnetic phonograph may be connected to the recorder by use of a standard phono plug.

2. Plug the phonograph plug into the input at the rear of the case marked "Phono-Radio."

3. Turn the "On-Off-Volume" control knob (21) clockwise until a click is heard, and allow a few seconds for the tubes to warm up.

4. Depress the safety button (16) and turn the function switch to "Phono-Radio" position.

5. Adjust the volume until one-half of the neon lamp flashes (as described in paragraph "Recording Level Indicator"). A recording is now being made on the tape.

To Make a Recording from Radio -

1. Use a cord having a phono plug and clips.

2. Attach the clips to the terminals on the loudspeaker and plug the cord into the input in the rear of the case marked "Phono-Radio," then proceed in the same manner as in Steps 3, 4, and 5, as explained in "To Make a Recording from Phonograph."

To Make a Recording from Microphone -

1. Plug microphone into input in rear of case marked "Microphone," then proceed in the same manner as in Steps 3, 4, and 5 in "To Make a Recording from Phonograph."

CAUTION: Do not hold the microphone closer than six inches from the lips. Do not set microphone on piano or radio, as it will pick up the vibrations.

Twin Track Recordings -

After a full reel of tape has been recorded, remove the full reel from the shaft (23) and turn it over; then place the empty reel on shaft (23) and full reel on (12). After this, proceed in the same manner as in Steps 3 and 4 on "Threading of Tape."

Splicing of Tape -

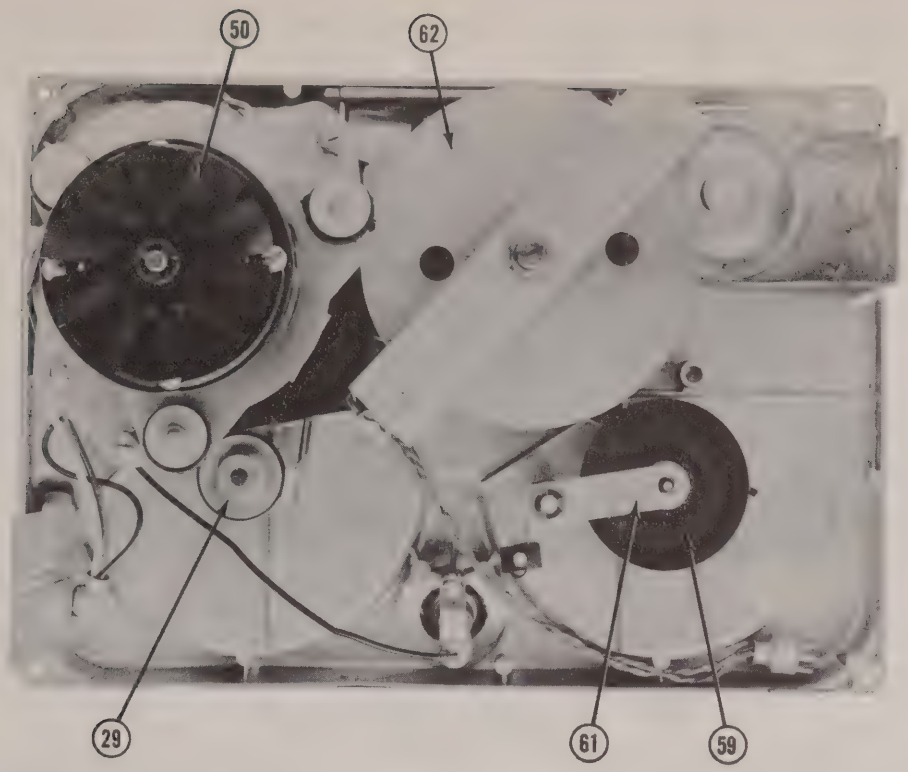


Figure 3

In case the tape is broken accidentally, or it is desired to edit the recording, a splice may be made with Scotch tape. It is suggested that colored Scotch tape be used to mark the tape to show the desired divisions or passages. Do not use medicated adhesive tape as it is not suited to this purpose. The Scotch tape should be applied to the reverse, or uncoated, side of the tape. The edges of the Scotch tape should be trimmed even with the recording tape.

To Stop the Recorder -

The tape may be stopped at any point by turning the function knob (9) to the position marked "Stop." To turn off the amplifier, the "On-Off-Volume" control knob (21) must be turned off.

To Rewind and Play Back a Recording -

1. If just one track has been recorded, turn function control knob (9) to "Rewind" and allow the tape to rewind on the supply reel.

2. To play back a recording when both tracks have been recorded, remove the full reel from the right-hand spindle, turn it over and place it on the left-hand spindle. Place empty reel on right-hand spindle. Thread the tape on the empty reel.

NOTE: At any part of the reel, the tape may be rewound fully, or partially, by simply turning the function switch (9) to "Rewind." Rewinding a full reel takes approximately one minute.

3. Turn the function control (9) to "Play" position. This starts the rotation of the reels.

4. Adjust the Volume control (21) and the tone control (22) to suit.

Fast-Forward -

During "Play Back," any portion of the recording may be skipped, or any recording on the tape may be located in a few seconds, by pulling on the "Fast-Forward" lever (19). A few seconds of "Fast-Forward" is equivalent to several minutes of recording time.

MECHANICAL FUNCTION

Fast Forward -

The "Fast-Forward" operates only in the "Play" position. When the "Fast-Forward" lever (19) is pulled forward, levers (41), (52), and (53) are actuated, causing the recording head (8) and pinch roller (25) to be pivoted away from the tape. This allows the reel shaft (23) and clutch diaphragm to rotate with the forward idler wheel (59). Normally, the shaft and diaphragm slip, to a certain extent, on the forward idler wheel due to the friction set up by the capstan and pinch roller (25); i.e., when the function lever (9) is in "Play" position.

Recorder Control Cam -

The recorder control cam (44), when actuated, controls the switching mechanism of the mechanical unit, and, through the media of the switch actuator link (57), arm (58), and shaft, actuates the switch (M2) for recording, erase, and playback.

Flywheel and Capstan -

The flywheel (62) and capstan, which is pressed on the shaft of the flywheel, along with action of the pinch roller (25), provides constant tape travel.

TROUBLES

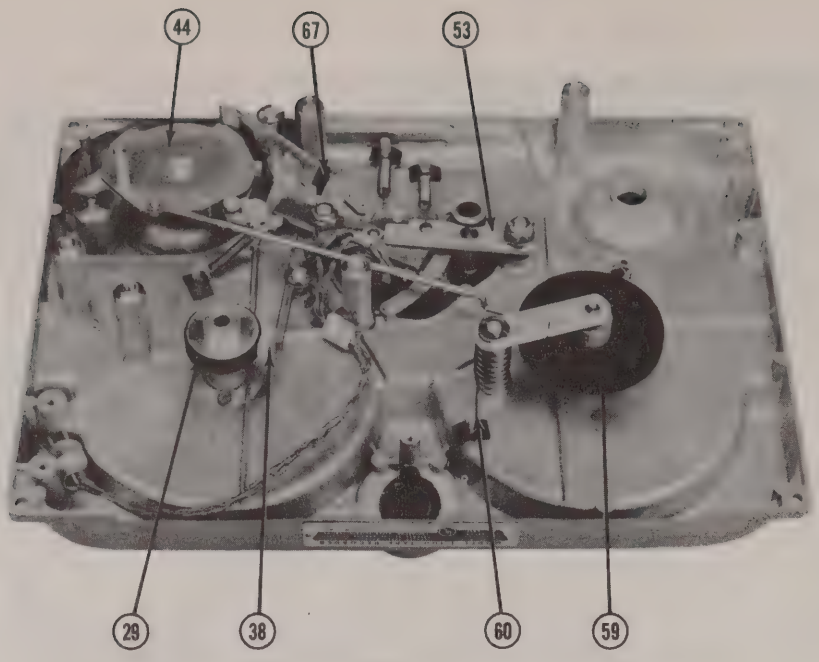


Figure 4

Failure to Erase -

1. Bronze pressure pad spring broken or bent away from the recording head, thereby not holding the tape against the lamination of the head:

(a) The pressure pad spring should be adjusted so that there is enough pressure applied to the tape to hold tape against the lamination of the head when the function control is in "Record" position.

2. Switch (M2) not being actuated:

(a) Check the linkage of the control cam (44), control link (57), arm (58), and switch control shaft to see if they are securely connected.

3. Faulty Switch (M2):

(a) Check the switch to see if it is making proper contact.

Failure to Record -

1. Pressure pad arm spring (35) broken or loose:

(a) If this is true, no pressure will be applied against the tape in holding it to the laminations of the recording head.

2. Switch (M2) not being actuated:

(a) Check the linkage of the control cam (44), control link (57), arm (58), and switch control shaft to see if they are connected.

3. Faulty Switch (M2):

(a) Check the switch (M2) to see if it is making proper contact.

4. Spring (55) loose or broken. Replace.

"Speed Variations" or "Wow" -

1. Check the motor pulley, drive wheel 45, and flywheel (62) for oil and foreigh material:

(a) Clean with carbon tetrachloride.

2. Oil on pinch roller (25).

(a) Clean with carbon tetrachloride.

Tape Will Not Run Forward -

1. Check spring (48) to see if it is connected:

(a) If spring (48) is loose or broken, the drive wheel (45) will not be pulled into contact with the flywheel (62).

2. Check spring (54) to see if it is connected to the pinch roller arm (53) and stud on the base plate.

(a) If spring (54) is not connected at these points, the pinch roller (25) will not hold the tape in positive contact with the capstan. The pressure set up by the pressure pad and spring against the tape and head will stop the rotation of the take-up reel.

3. Adjusting screw (65) too tight:

(a) If the screw (65) is adjusted too tight against the ball bearing, (64) it will cause binding between the hub of the flywheel and the bearing on the base plate. Adjust the screw so that there is no end play but not tight enough to cause binding. Tighten lock nut (66).

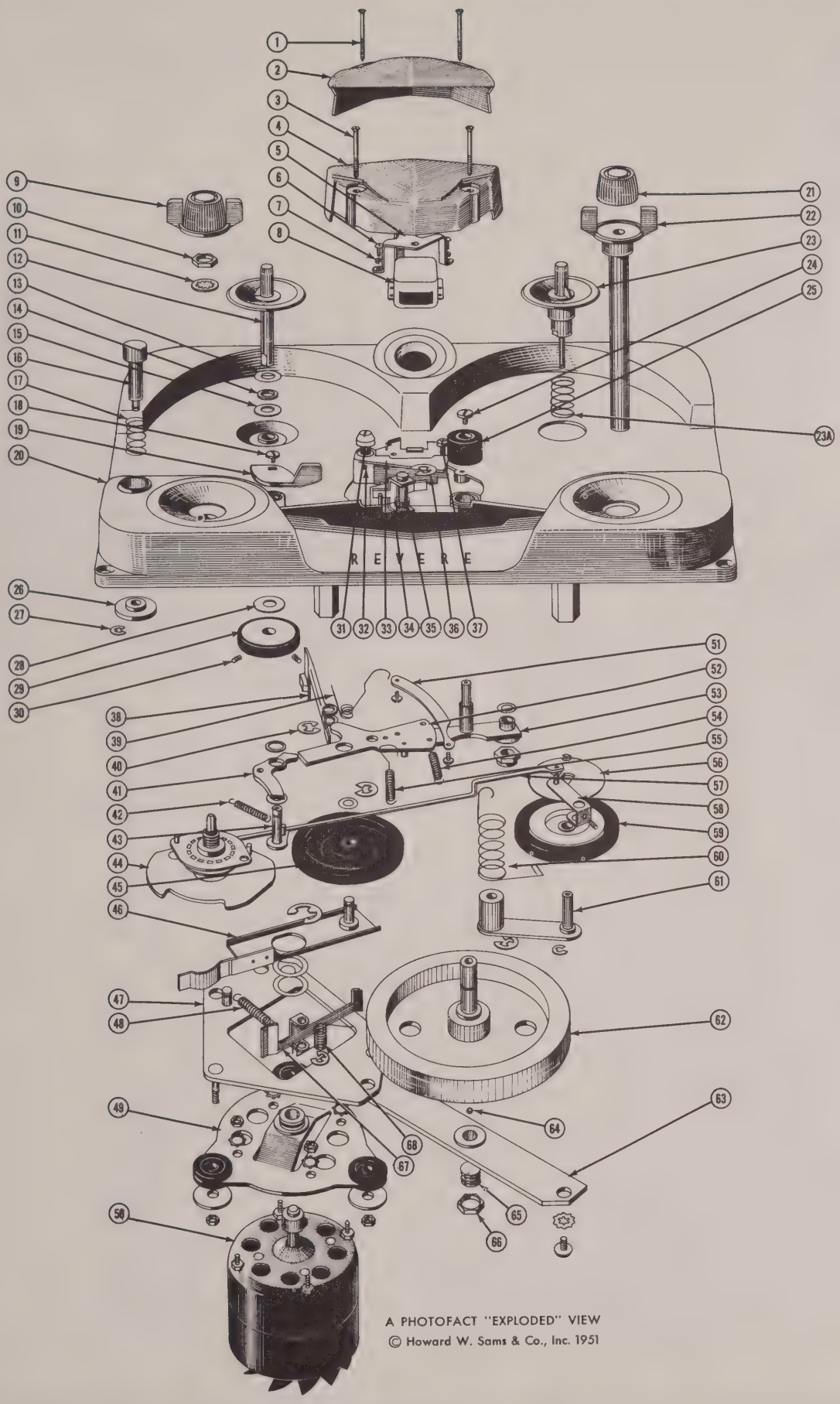
No Rewind -

1. Pulley (29) loose on reel shaft (12):

(a) When tightening pulley allow 1/8" to 3/32" end play in shaft.

Tape Overruns Take-Up Spool -

1. Spring (60) loose or broken, thereby not holding idler wheel (59) against the flywheel (62).



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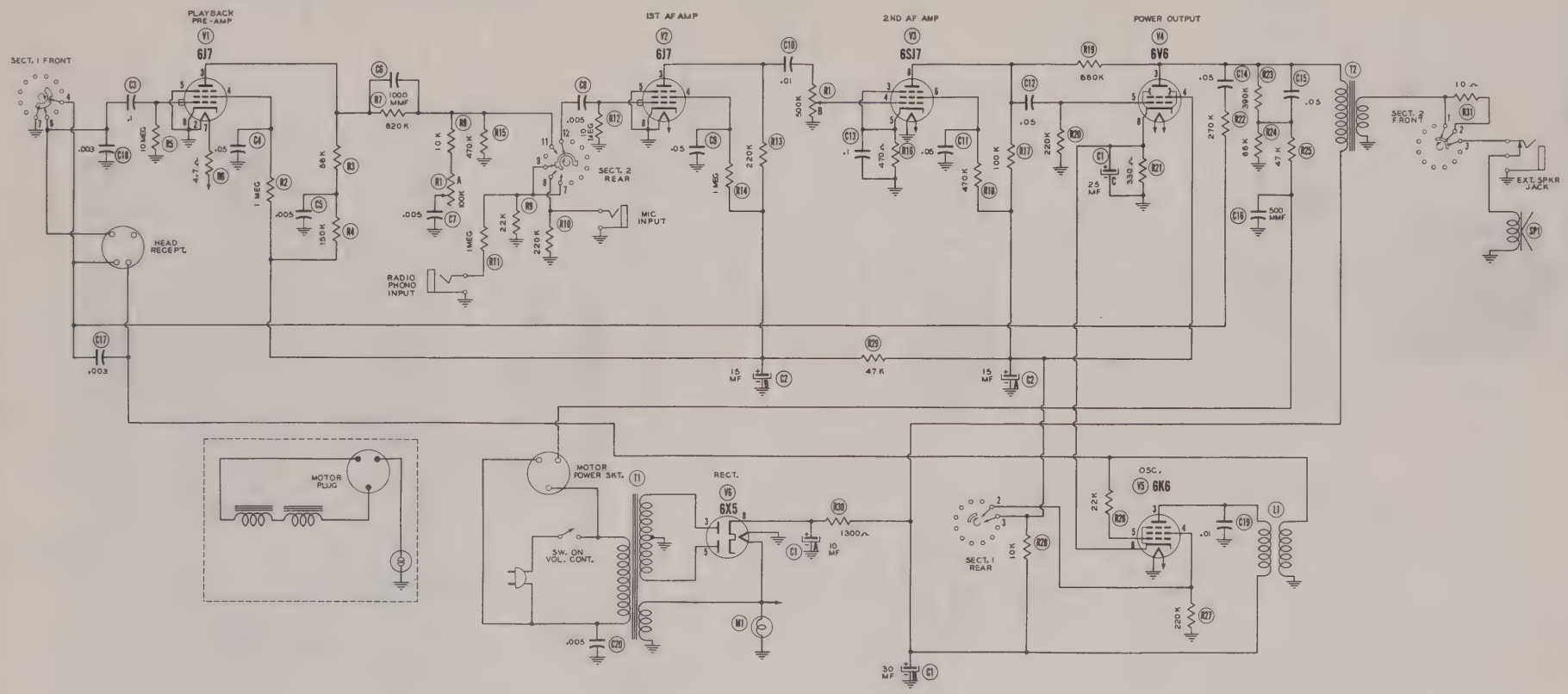

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J7	0V	0V	40VDC	25VDC	0V	0V	6.5VAC	0V	-.3VDC
V 2	6J7	0V	0V	40VDC	22VDC	0V	0V	6.5VAC	0V	-.3VDC
V 3	6SJ7	0V	0V	6VDC	0V	.6VDC	300VDC	6.5VAC	85VDC	
V 4	6V6GT	0V	0V	325VDC	200VDC	0V	325VDC	6.5VDC	12VDC	
V 5	6K6GT	0V	6.5VAC	325VDC	200VDC	5-5.4VDC	12VDC	0V	12VDC	
V 6	6X5GT	0V	0V	340VAC	5.5VAC	340VAC	0V	6.5VAC	390VDC	

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J7	0Ω	0Ω	†250KΩ	††Meg	0Ω	0Ω	2.2Ω	0Ω	10Meg
V 2	6J7	0Ω	0Ω	†270KΩ	††Meg	0Ω	Inf.	.1Ω	0Ω	10Meg
V 3	6SJ7	0Ω	0Ω	470Ω	500KΩ	470Ω	†480KΩ	.1Ω	†100KΩ	
V 4	6V6GT	0Ω	0Ω	††.7KΩ	††1KΩ	22KΩ	1.5KΩ	.1Ω	330Ω	
V 5	6K6GT	0Ω	.1Ω	††.5KΩ	††1KΩ	22KΩ	330Ω	0Ω	330Ω	
V 6	6X5GT	Inf.	0Ω	220Ω	2.2Ω	225Ω	Inf.	.1Ω	140ΩΩ	

† MEASURED FROM PIN 8 OF V6.

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2. Spring (23A) broken, resulting in clutch diaphragm not being held in frictional contact with the forward idler wheel (59).

Tape Overruns Recording Head When Fast-Forward is Used and Released -

1. Spring (39) on brake arm (38) broken or loose.

2. Felt pad on brake arm (88) worn or missing.

3. Oil or foreign material on rubber tire of idler (29). Clean with carbon tetrachloride.

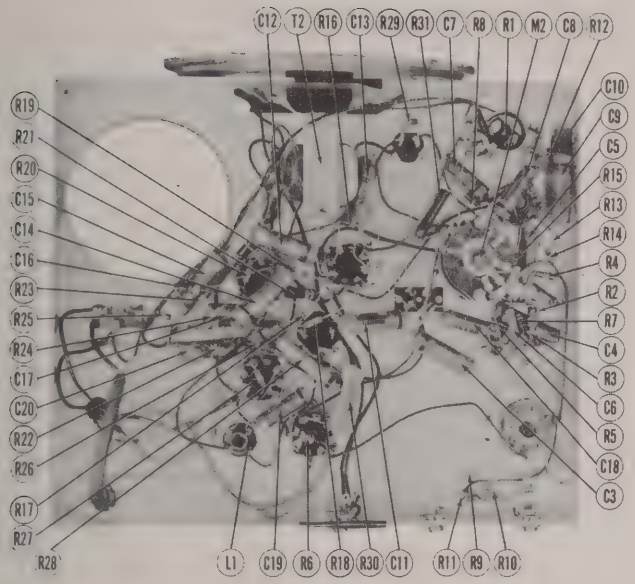

Figure 5

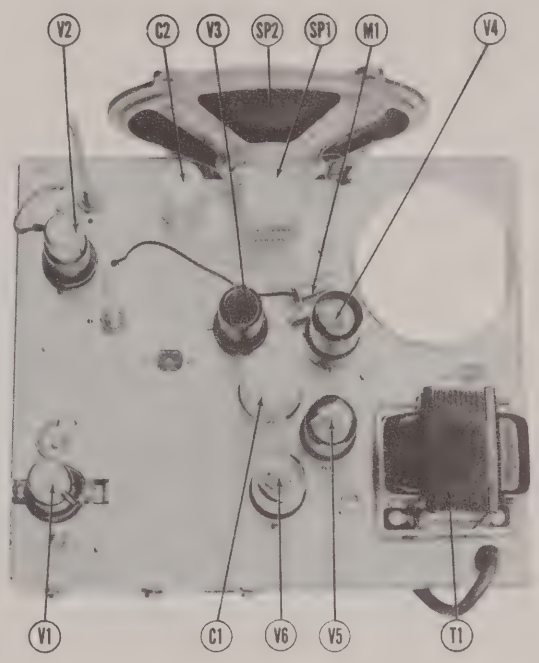

Figure 6

MECHANICAL PARTS LIST

REF. NO.	DESCRIPTION	REF. NO.	DESCRIPTION
1	Rear Trim Cover Mounting Screw	21	On-Off-Volume Control Knob
2	Rear Trim Cover	22	Tone Control
3	Front Trim Cover Mounting Screw	23	Reel Shaft and Platform Assembly
4	Front Trim Cover	23A	Clutch Pressure Spring
5	Recording Head Mounting Bracket	24	Pinch Roller Mounting Screw
6	Head Bracket Mounting Screw	25	Pinch Roller
7	Lockwasher	26	Erase Safety Button Release
8	Recording Head	27	"C" Clip
9	Recorder Control Knob	28	Washer, Fiber
10	Hex Nut	29	Reel Shaft and Platform Assembly Drive Wheel
11	Lockwasher		
12	Reel Shaft and Platform Assembly	30	Bristol Set Screw
13	Washer, Flat	31	Adjustable Tape Guide
14	Felt Washer	32	Set Screw
15	Fiber Washer	33	Head Mounting Plate
16	Record Safety Button	34	Pressure Pad Arm
17	Spring	35	Pressure Pad Arm Spring
18	Screw	36	"C" Washer
19	Fast Forward Control Knob	37	Tape, Guide
20	Baseplate	38	Brake Assembly

PARTS LIST (Cont'd.)

REF. NO.	DESCRIPTION
39	Brake Engaging Spring
40	"C" Washer
41	Head Pivot Plate Actuator Lever
42	Spring
43	Fast-Forward Control Shaft
44	Recorder Control Cam
45	Idler Wheel
46	Idler Wheel Mounting and Index Lever
47	Motor Mounting Bracket
48	Spring
49	Motor Shaft Bearing Vibration Bracket
50	Motor
51	Head Pivot Plate Support and Slide
52	Head Pivot and Mounting Plate
53	Pinch Roller Bearing Stud and Arm
54	Pinch Roller Tension Spring
55	Recording Head Tension Spring
56	Clutch Diaphragm
57	Switch Actuator Link
58	Switch Actuator Arm
59	Forward Idler Wheel
60	Spring
61	Forward Idler Wheel Support Arm
62	Flywheel
63	Flywheel Mounting Bar
64	Ball Bearing
65	Adjusting Screw
66	Adjusting Nut
67	Flywheel Brake Assembly
68	Brake Spring

ELECTRICAL PARTS LIST

ITEM NO.	USE AND DESCRIPTION
V1	6J7, Playback Preamp.
V2	6J7, 1st AF Amp.
V3	6SJ7, 2nd AF Amp.
V4	6V6GT, Power Output
V5	6K6GT, Oscillator
V6	6X5GT, Rectifier
C1A	10 Mfd. @ 450 V., Filter, Electrolytic
B	30 Mfd. @ 350 V., Filter, Electrolytic
C	25 Mfd. @ 25 V., Output Cathode Bypass, Electrolytic
C2A	15 Mfd. @ 350 V., Decoupling, Electrolytic
B	15 Mfd. @ 350 V., Decoupling, Electrolytic
C3	.1 Mfd. @ 200 V., Audio Coupling
C4	.05 Mfd. @ 400 V., Playback Preamp. Screen Bypass
C5	.005 Mfd. @ 600 V., Playback Preamp. Plate Decoupling
C6	1000 Mmf. @ 500 V., Tone Compensation
C7	.005 Mfd. @ 600 V., Tone Compensation
C8	.005 Mfd. @ 600 V., Audio Coupling
C9	.05 Mfd. @ 400 V., 1st AF Amp. Screen Bypass
C10	.01 Mfd. @ 400 V., Audio Coupling
C11	.05 Mfd. @ 400 V., 2nd AF Amp. Screen Bypass
C12	.05 Mfd. @ 400 V., Audio Coupling
C13	.1 Mfd. @ 200 V., 2nd AF Amp. Cathode Bypass
C14	.05 Mfd. @ 400 V., Tone Compensation
C15	.05 Mfd. @ 400 V., Tone Compensation
C16	500 Mmf. Tone Compensation
C17	.003 Mfd. @ 600 V., Audio Coupling
C18	.003 Mfd. @ 600 V., Fixed Trimmer
C19	.01 Mfd. @ 400 V., Fixed Trimmer
C20	.005 Mfd. @ 1000 V., Line Filter
R1A	100K Ohm, Tone Control
B	500K Ohm, Volume Control, On-Off Switch
R2	1 Meg., 1/2 Watt, Playback Preamp. Screen
R3	56K Ohm, 1 Watt, Playback Preamp. Plate
R4	560K Ohm, 1/2 Watt, Playback Preamp. Plate Decoupling
R5	10 Meg., 1/2 Watt, Playback Preamp. Grid
R6	4.7 Ohm, 1/2 Watt, Playback Preamp. Filament (Wire-Wound)
R7	820K Ohm, 1/2 Watt, Tone Compensation
R8	10K Ohm, 1/2 Watt, Tone Compensation
R9	22K Ohm, 1/2 Watt, Tone Compensation
R10	220K Ohm, 1/2 Watt, Microphone Load
R11	1 Meg., 1/2 Watt, Tone Compensation
R12	10 Meg., 1/2 Watt, 1st AF Grid
R13	220K Ohm, 1/2 Watt, 1st AF Plate
R14	1 Meg., 1/2 Watt, 1st AF Screen
R15	470K Ohm, 1/2 Watt, Tone Compensation
R16	470K Ohm, 1/2 Watt, 2nd AF Cathode
R17	100K Ohm, 1/2 Watt, 2nd AF Plate
R18	470K Ohm, 1/2 Watt, 2nd AF Screen
R19	680K Ohm, 1/2 Watt, Feedback
R20	220K Ohm, 1/2 Watt, Output Grid
R21	330 Ohm, 1 Watt, Output Cathode
R22	270K Ohm, 1/2 Watt, Tone Compensation
R23	370K Ohm, 1/2 Watt, Tone Compensation
R24	68K Ohm, 1/2 Watt, Tone Compensation
R25	47K Ohm, 1/2 Watt, Tone Compensation
R26	22K Ohm, 1/2 Watt, Oscillator Grid
R27	220K Ohm, 1/2 Watt, Voltage Divider
R28	10K Ohm, 2 Watt, Decoupling
R29	47K Ohm, 1/2 Watt, Decoupling
R30	1300 Ohm, 5 Watt, Filter (Wire-Wound)
R31	10 Ohm, 1 Watt, Voice Coil Shunt (Wire-Wound)
T1	Power Transformer
T2	Output Transformer
SP1	5" x 7" PM Speaker
SP2	Cone, 3.3 Ohm Voice Coil
L1	Oscillator Coil
M1	Pilot Lamp - Type #47
M2	Function Switch

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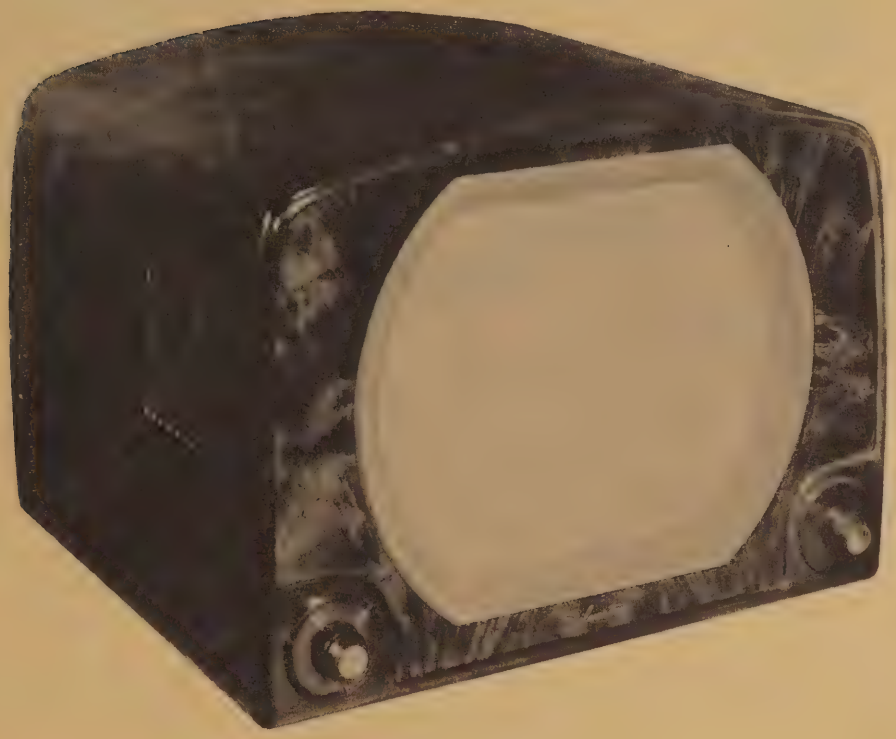

MODEL 106

SILVERTONE MODELS
106, 107, 141 (Ch. 132.889-2)

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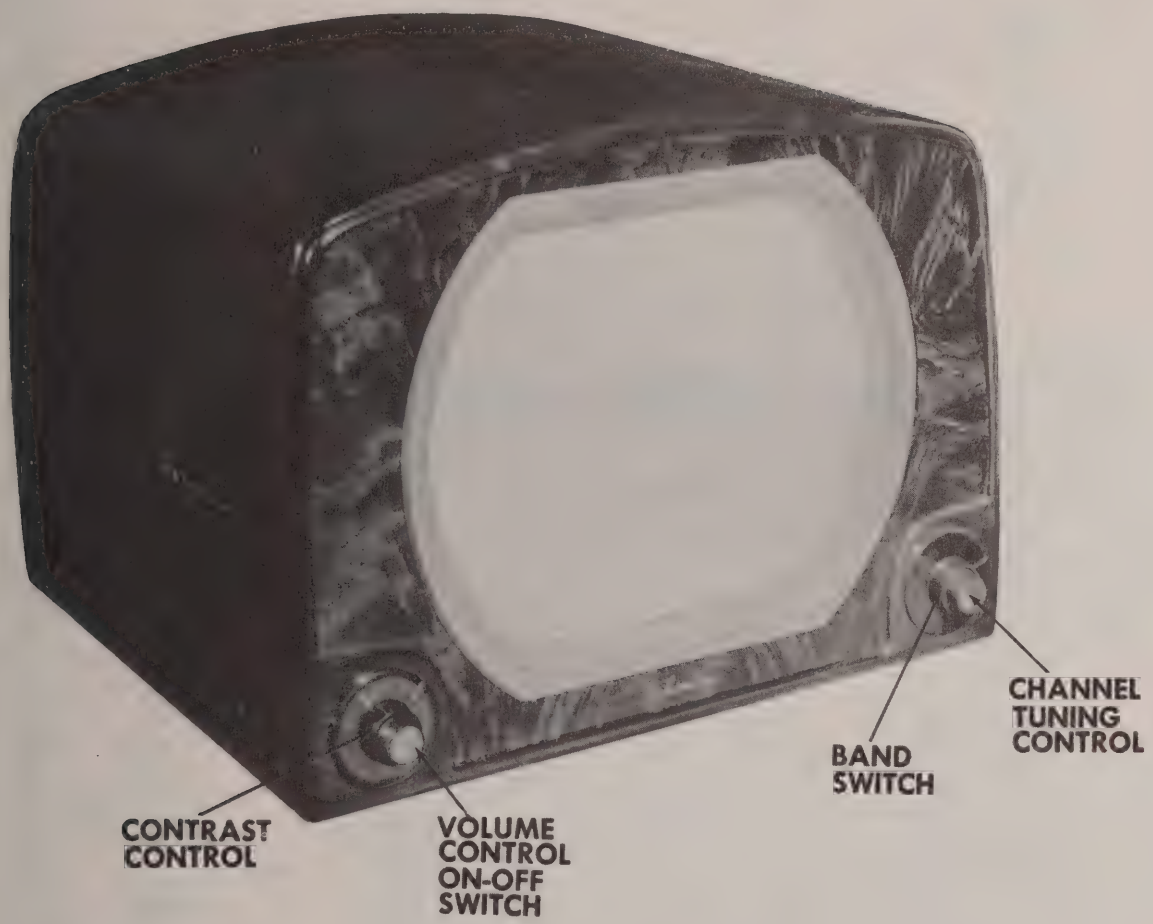

SILVERTONE MODELS
106, 107, 141 (Ch. 132.889-2)

SILVERTONE MODEL 106

TRADE NAME	Silverton, Models 106, 107, 141 (Ch. 132.889-2)
SUPPLIER	Sears Roebuck & Co., 925 So. Homan, Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.6 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 10
Drive Cord Stringing 10
Horizontal Sweep Circuit Adjustment 11
Parts List And Description 12, 13, 14
Photographs
Cabinet - Rear View 11
Capacitor And Alignment Identification 4, 9
Photographs (Continued)
Chassis - Top View 3
RF Tuner 10
Resistor And Inductor Identification 15, 16
Schematic 2
Tube Placement Chart 5
Voltage And Resistance Measurements 8

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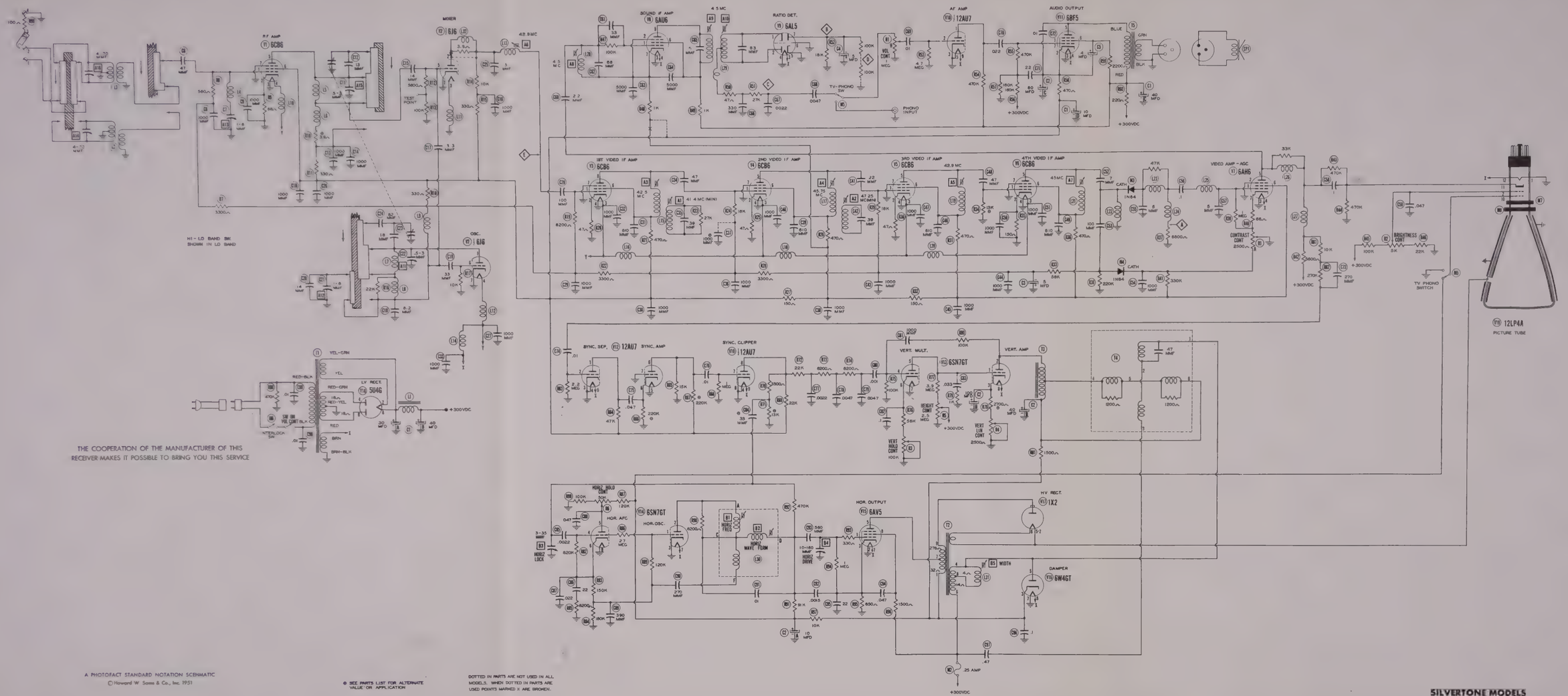

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◈ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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SILVERTONE MODELS
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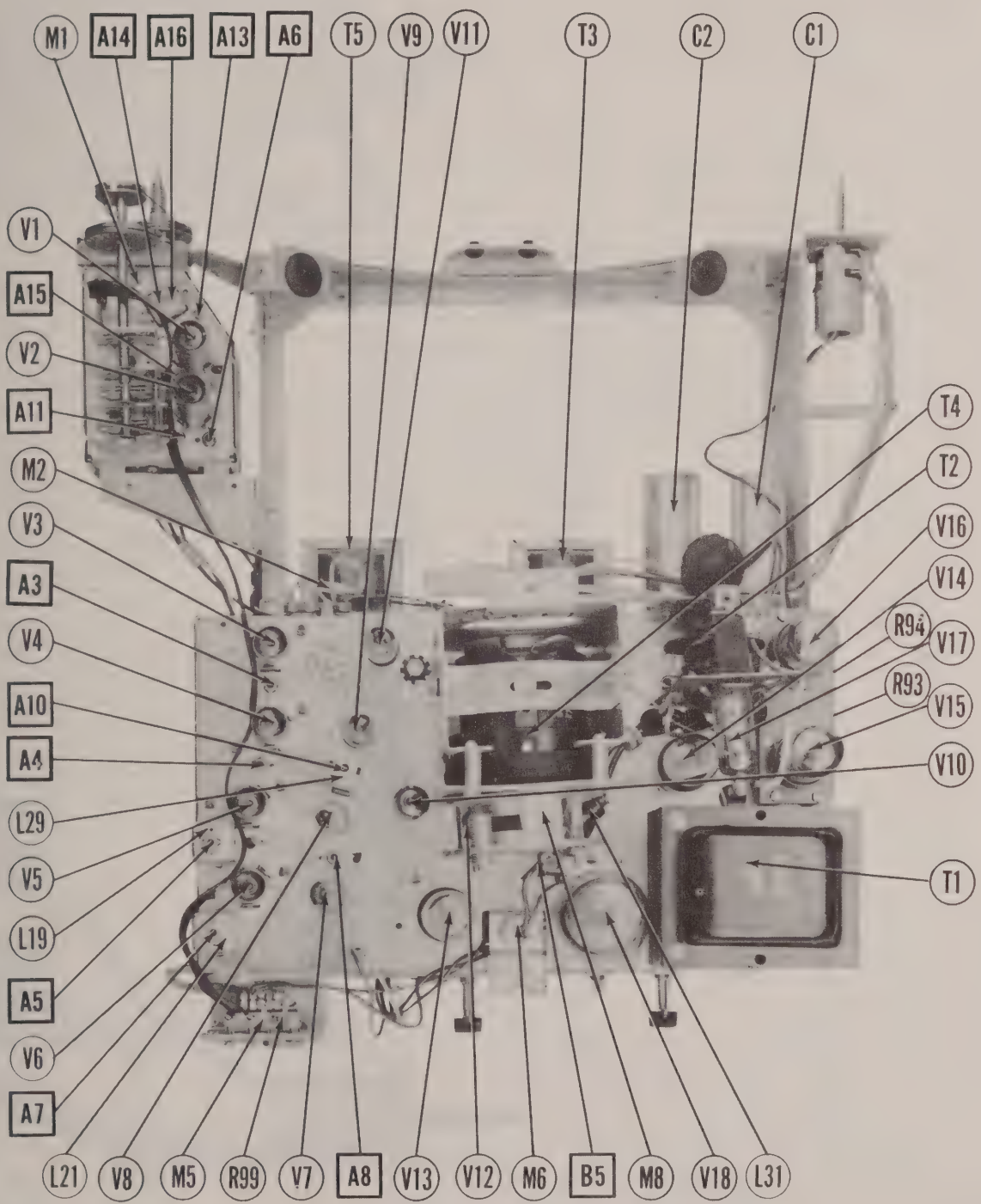
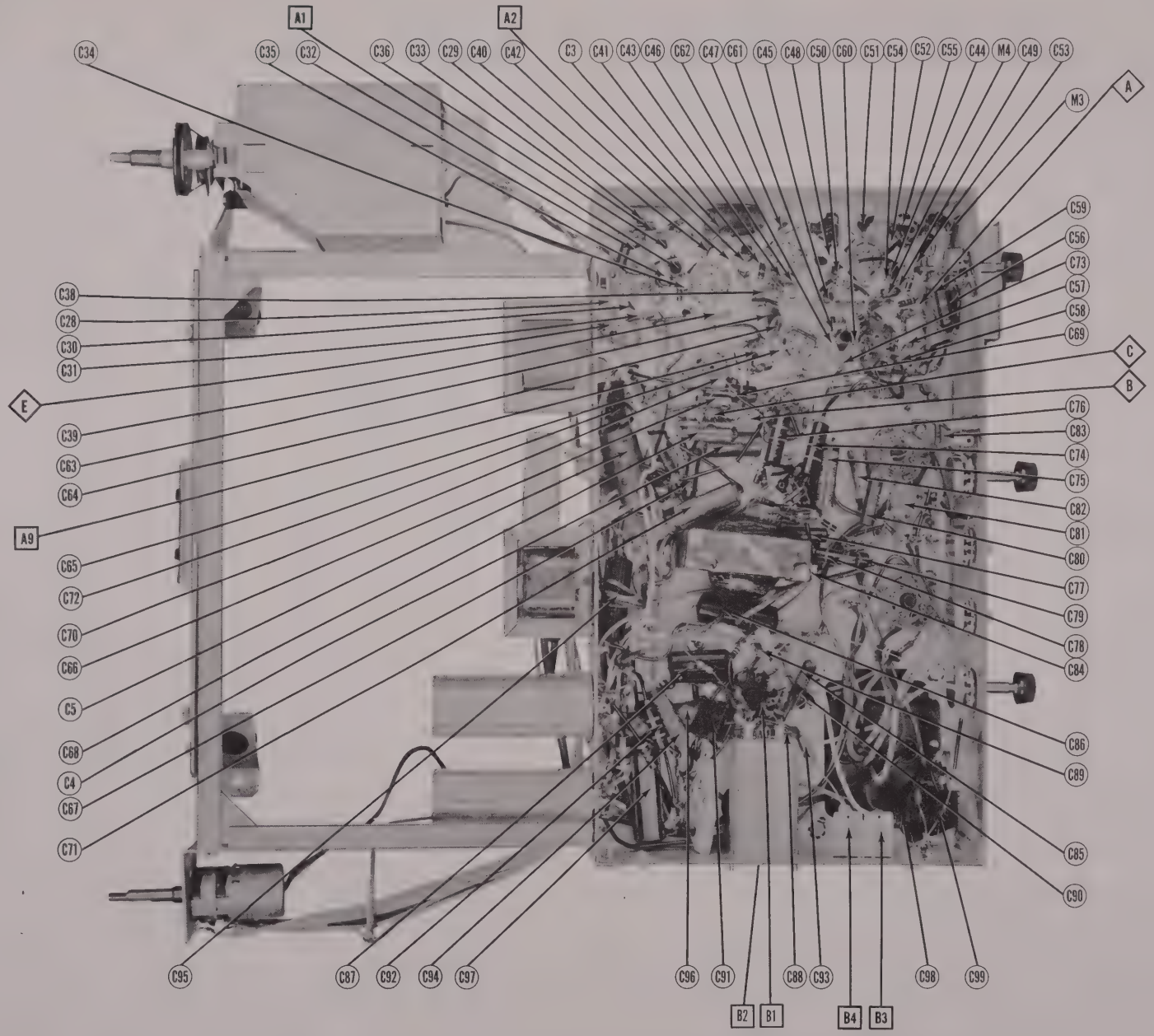
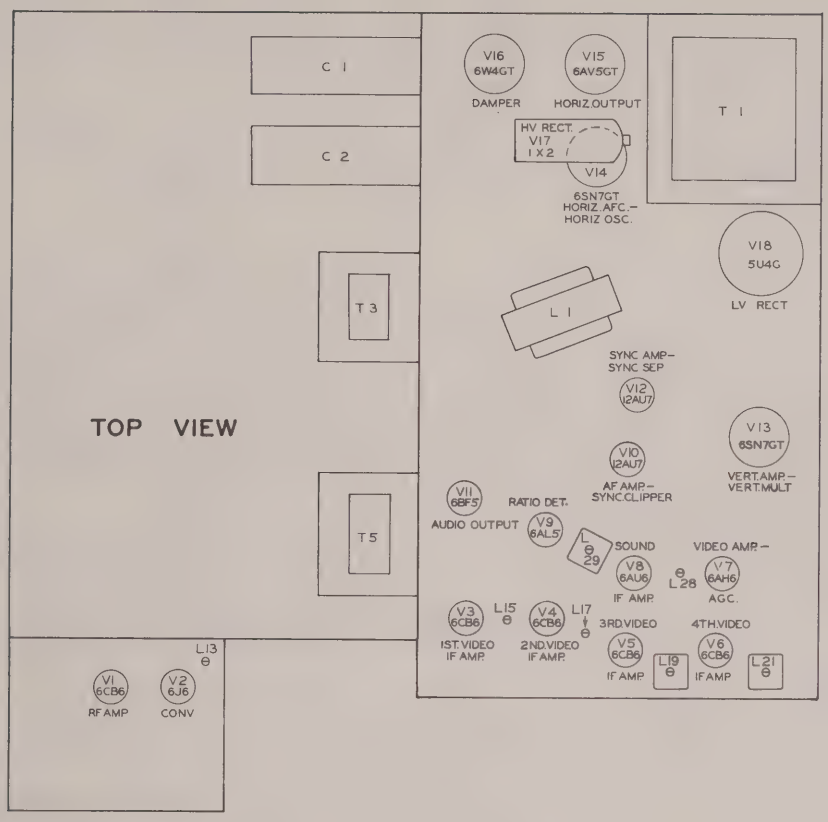
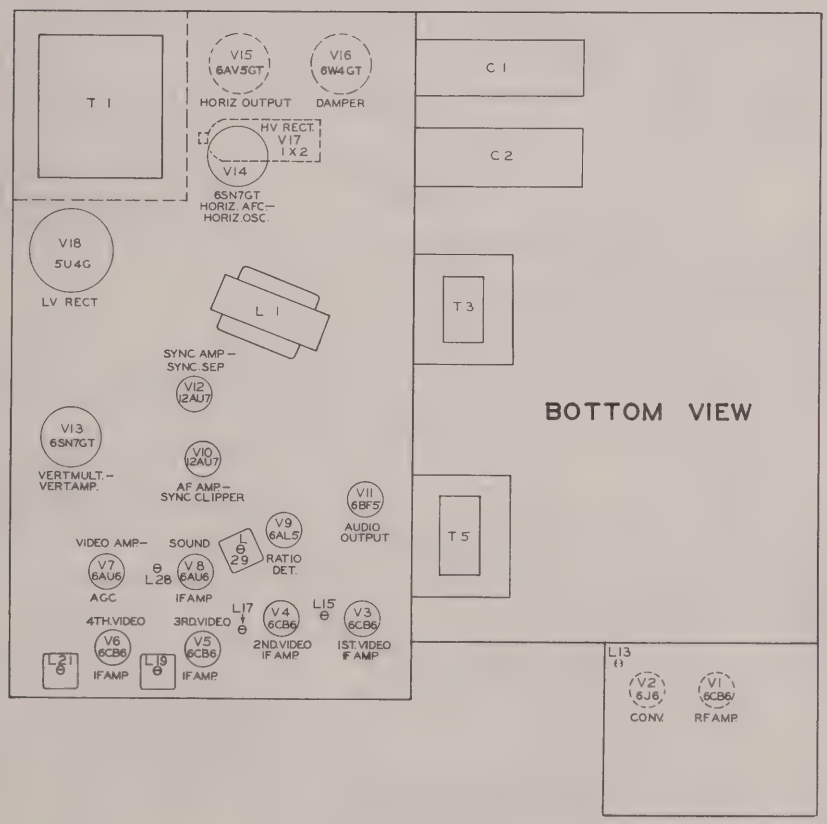


CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and dressed away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and eliminate the possibility of erroneous indications.

Connect the negative lead of a 3 volt battery to the junction of R33 and C3, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	41.4MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	Direct	"	47.25MC	"	"	A2	"
3.	Direct	"	42.5MC	"	"	A3	Adjust for maximum deflection.
4.	Direct	"	45.75MC	"	"	A4	"
5.	Direct	"	42.9MC	"	"	A5, A6	"
6.	Direct	"	45MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

Connect a 27KΩ isolating resistor in series with the vertical input lead of the oscilloscope, and a 250MMF capacitor across the vertical input terminals.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to ungrounded tube shield floating over dummy converter tube. Low side to chassis.	45MC (10MC SWP)	41.4MC 42.75MC 45.75MC 47.25MC	Any	Vert. Amp. thru 27KΩ to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A3 thru A7 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to pin 1 (Grid) of 6AH6 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B). Common to chassis.	A8, A9	Adjust for maximum deflection.
9.	.01MFD	"	"	"	DC Probe to Point (C). Common to Point (D).	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to pin 1 (Grid) of 6AH6 (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A8, A9	Disconnect stabilizer capacitor C4. Adjust for maximum amplitude and symmetry as per figure 2.
9.	.01MFD	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A10	Reconnect capacitor C4. Adjust A10 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

HIGH BAND OSCILLATOR ALIGNMENT

Turn the band switch to "high band" (counter-clockwise).

Remove the dummy converter tube and replace the original 6J6 in its socket.

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	258.5MC (Unmod.)	Tuning gang fully open	Vert. Amp. to Point (E). Low side to chassis.	A11	Adjust for zero beat indication on oscilloscope. This wil be indicated by a sharp line between two wide lines.
11.	"	"	Approx. 219MC	"	"	L7	Vary generator frequency until zero beat occurs. If zero beat occurs above 219.5MC squeeze turns of L7 together slightly. If zero beat occurs below 219.5MC spread L7 turns slightly. Repeat steps 10 and 11 until oscillator covers exactly 219.5MC to 258.5MC.

LOW BAND OSCILLATOR ALIGNMENT

Turn the band switch to "low band" (clockwise).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	130.5MC (Unmod.)	Tuning gang fully open	Vert. Amp. to Point (E). Low side to chassis.	A12	Adjust for zero beat indication on oscilloscope.
13.	"	"	Approx. 99MC	Tuning gang fully closed	"	L8	Vary generator frequency until zero beat occurs. If zero beat occurs above 99MC compress turns of L8 slightly. If zero beat occurs below 99MC spread L8 turns slightly. Repeat steps 12 and 13 until oscillator covers exactly 99MC to 130.5MC.

TUNER IF TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
14.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	44MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A13	Adjust for MINIMUM deflection.

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND RF ALIGNMENT

Turn the band switch to "high band" (counter-clockwise).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	201MC (10MC SWP)	42.75MC 45.75MC	11	Vert. Amp. to Point (A). Low side to chassis.	A14, A15	Adjust for maximum amplitude of response curve. If peaks are not even recheck video IF alignment. For this step peaks must be even as shown in figure 4.
16.	"	"	213MC (10MC SWP)	"	13	"		Check the response curve on all high band channels. If the response curve on any channels fails to fall within the limits shown in figures 4A and 4B, expand or compress turns of L5 and repeat step 15 and 16 until all high band channels fall within the proper limits.
			207MC (10MC SWP)		12			
			195MC (10MC SWP)		10			
			189MC (10MC SWP)		9			
			183MC (10MC SWP)		8			
			177MC (10MC SWP)		7			

LOW BAND RF ALIGNMENT

Turn the band switch to "low band" (clockwise).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	79MC (10MC SWP)	42.75MC 45.75MC	5	Vert. Amp. to Point (A). Low side to chassis.	A16, L6	Adjust A16 and turns of L6 for maximum amplitude of response curve.
18.	"	"	85MC (10MC SWP)	"	6	"		Check to see that all low band channels fall within the limits shown in figures 4A and 4B.
			69MC (10MC SWP)		4			
			63MC (10MC SWP)		3			
			57MC (10MC SWP)		2			

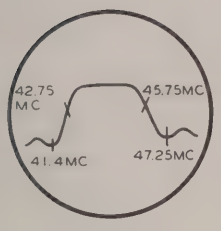


FIG. 1

FIG. 2

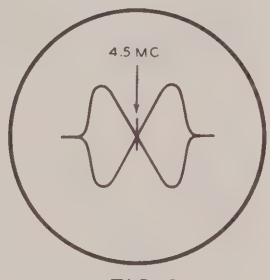


FIG. 3

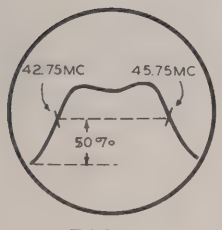


FIG. 4

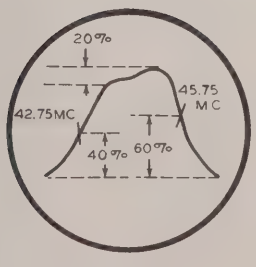


FIG. 4A

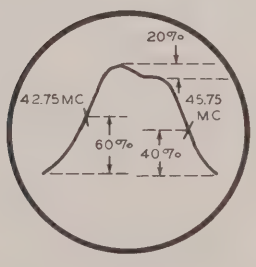


FIG. 4B

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.8VDC	.9VDC	0V	6.3VAC	130VDC	130VDC	0V		
V 2	6J6	125VDC	90VDC	0V	6.3VAC	-1.8VDC	§-5VDC	0V		
V 3	6CB6	-1.8VDC	.8VDC	6.3VAC	0V	130VDC	130VDC	0V		
V 4	6CB6	-.4VDC	.7VDC	6.3VAC	0V	130VDC	130VDC	0V		
V 5	6CB6	-.4VDC	.6VDC	6.3VAC	0V	125VDC	125VDC	0V		
V 6	6CB6	0V	1.6VDC	6.3VAC	0V	125VDC	125VDC	0V		
V 7	6AH6	.8VDC	0V	0V	6.3VAC	245VDC	130VDC	25VDC		
V 8	6AU6	†3.2VDC	†11VDC	0V	6.3VAC	†130VDC	†130VDC	†11VDC		
V 9	6AL5	-.5VDC	-.5VDC	6.3VAC	0V	0V	0V	-1VDC		
V 10	12AU7	30VDC	-.5VDC	0V	0V	0V	45VDC	-1.2VDC	0V	6.3VAC
V 11	6BF5	†23VDC	†30VDC	0V	6.3VAC	†125VDC	†120VDC	†23VDC		
V 12	12AU7	40VDC	-1.3VDC	0V	0V	0V	8.5VDC	0V	2.6VDC	6.3VAC
V 13	6SN7GT	30VDC 20VDC	430VDC	55VDC 43VDC	-1.7VDC	30VDC 20VDC	8VDC 4VDC	0V	6.3VAC	
V 14	6SN7GT	-60VDC	215VDC	0V	-3VDC	180VDC 125VDC	17VDC	6.3VAC	0V	
V 15	6AU5GT	12VDC	0V	95VDC	0V	*	0V	6.3VAC	265VDC	
V 16	6W4GT	0V	0V	450VDC	0V	280VDC	0V	0V	6.3VAC	
V 17	1X2	* DO NOT MEASURE								
V 18	5U4G	0V	310VDC	6.3VAC	300VAC	0V	300VAC	0V	310VDC	
V 19	12LP4A	0V	115VDC 35VDC	PIN 10 420VDC	PIN 11 115VDC	PIN 12 6.3VAC				

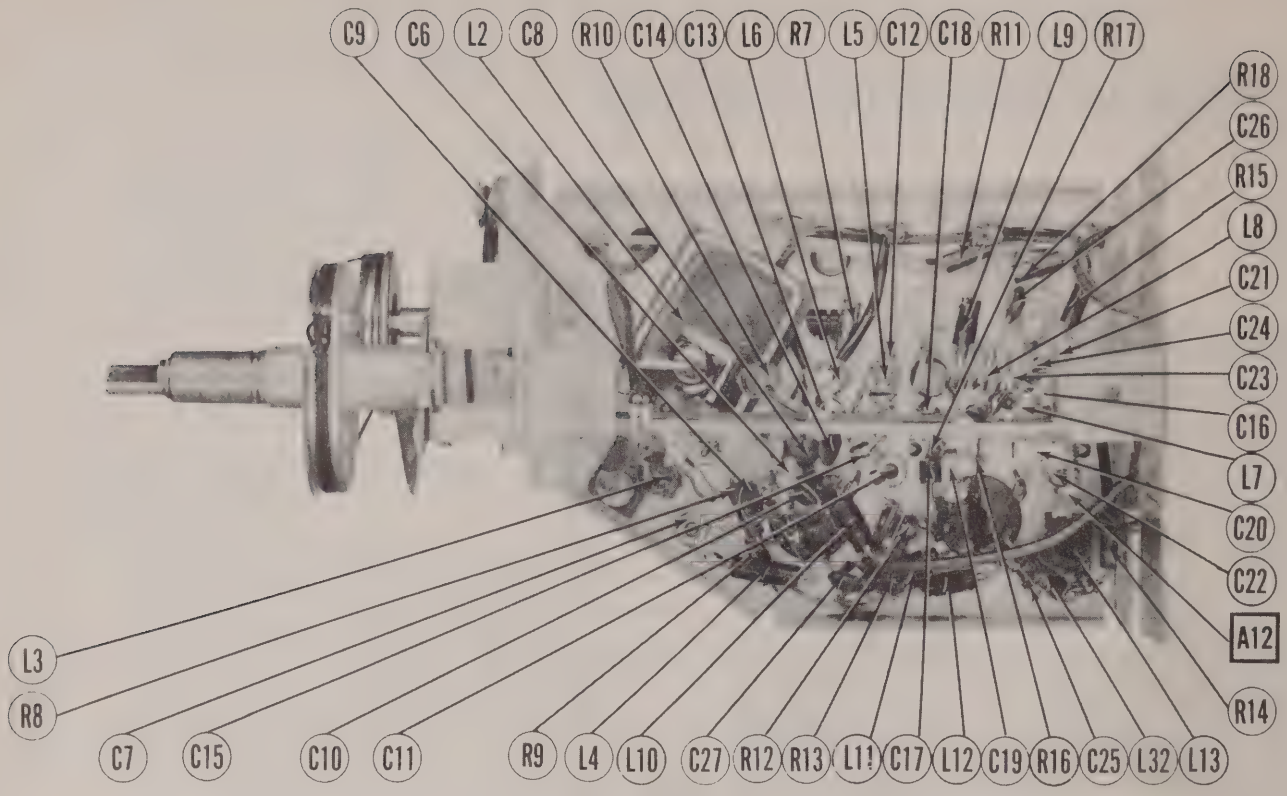
TV-PHONO SWITCH IN "TV" POSITION
§ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM JUNCTION OF C1D AND R58
* DO NOT MEASURE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	200KΩ	68Ω	0Ω	.1Ω	†330Ω	†0Ω	0Ω		
V 2	6J6	†330Ω	†10KΩ	0Ω	.1Ω	105KΩ	10KΩ	0Ω		
V 3	6CB6	200KΩ	47Ω	.1Ω	0Ω	†470Ω	†470Ω	0Ω		
V 4	6CB6	200KΩ	47Ω	.1Ω	0Ω	†620Ω	†620Ω	0Ω		
V 5	6CB6	200KΩ	47Ω	.1Ω	0Ω	†770Ω	†770Ω	0Ω		
V 6	6CB6	13KΩ	150Ω	.1Ω	0Ω	†770Ω	†770Ω	0Ω		
V 7	6AH6	1 Meg.	0Ω	0Ω	11Ω	#5.6KΩ	†300Ω	2.5KΩ		
V 8	6AU6	†100KΩ	†1.1KΩ	0Ω	.1Ω	#1.2KΩ	#1.2KΩ	†1.1KΩ		
V 9	6AL5	Inf.	Inf.	.1Ω	0Ω	0Ω	0Ω	18KΩ		
V 10	12AU7	#470KΩ	4.7 Meg.	0Ω	0Ω	0Ω	†18KΩ	1 Meg.	0Ω	.1Ω
V 11	6BF5	550KΩ	†470Ω	0Ω	.1Ω	#480Ω	#2.5KΩ	550KΩ		
V 12	12AU7	†47KΩ	2.2 Meg.	0Ω	0Ω	0Ω	†35KΩ	0Ω	220KΩ	.1Ω
V 13	6SN7GT	# 4 Meg. # 6 Meg.	▲2.4KΩ	5KΩ 2.7KΩ	100KΩ	# 4 Meg. # 6 Meg.	160KΩ 56KΩ	0Ω	.1Ω	
V 14	6SN7GT	300KΩ	▲100KΩ	0Ω	1 Meg.	▲130KΩ ▲140KΩ	330Ω	.1Ω	0Ω	
V 15	6AV5GT	1 Meg.	0Ω	850Ω	Inf.	▲32Ω	Inf.	.1Ω	#1.5KΩ	
V 16	6W4GT	Inf.	Inf.	150KΩ	Inf.	#50Ω	Inf.	0Ω	.1Ω	
V 17	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲310Ω
V 18	5U4G	Inf.	40KΩ	.1Ω	18Ω	Inf.	18Ω	Inf.	40KΩ	
V 19	12LP4A	0Ω	20KΩ 50KΩ	PIN 10 ▲10KΩ	PIN 11 230KΩ	PIN 12 .1Ω				

TV-PHONO SWITCH IN "TV" POSITION
† MEASURED FROM JUNCTION OF C1D AND R58
# MEASURED FROM PIN 8 OF V18
▲ MEASURED FROM PIN 3 OF V16

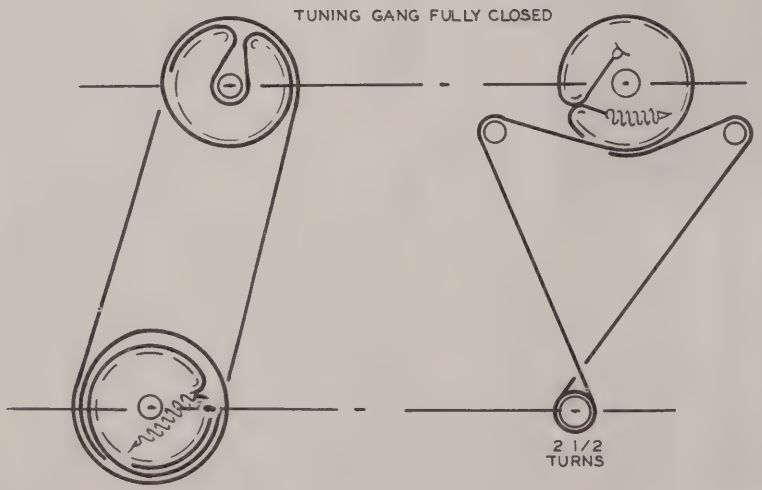
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



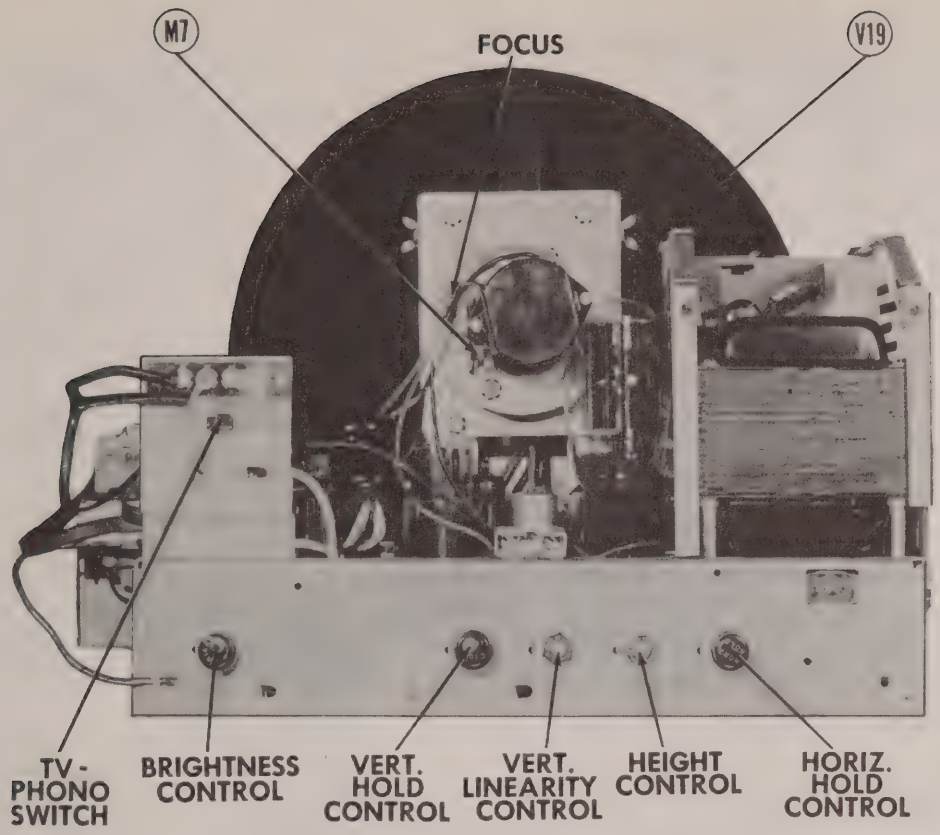
RF TUNER
DISASSEMBLY INSTRUCTIONS

1. Remove six push-on type control knobs.
2. Remove ten wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker leads.
5. Remove six 1/4" hex head.
6. Remove four 11/32" hex nuts from speaker. Remove speaker.

Note: For Picture Tube Removal Follow Instructions Above.



FINE TUNING DRIVE CORD STRINGING



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control to the mid-position of its range.

Set the horizontal lock trimmer (B3) to one turn out from fully clockwise.

Connect the vertical input lead of an oscilloscope to terminal "C" of L30.

Turn the waveform adjustment slug (B2) to maximum counter-clockwise and then 3 turns clockwise.

Adjust the horizontal frequency adjustment slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal waveform slug (B2) until the broad and narrow peaks of the waveform on the oscilloscope are of equal height as shown in figure 5. If necessary adjust B1 to keep the picture synchronized during adjustment of B2.

Remove the oscilloscope.

Turn the hold control to maximum clockwise and adjust B1 until the picture is out of synchronization and shows one vertical or diagonal bar in the picture.

Turn the hold control to maximum counter-clockwise.

If the picture does not fall out of synchronization, momentarily short the antenna terminals.

Turn the hold slowly clockwise and note the least number of bars present at the pull in point. There should be 2 bars present; if not, adjust the horizontal lock trimmer (B3) and repeat the check until 2 bars are present at the pull-in point.

HORIZONTAL DRIVE AND WIDTH ADJUSTMENT

Turn the horizontal drive trimmer (B4) two turns counter-clockwise from maximum clockwise.

Adjust the width slug (B5) until the picture fills the mask horizontally.

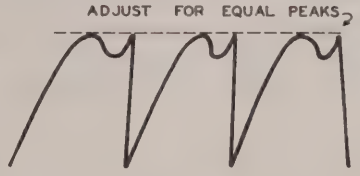


FIG. 5

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6CB6	6CB6	6CK	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6CB6	6CB6	6CK	
V4	2nd Video IF	6CB6	6CB6	6CK	
V5	3rd Video IF	6CB6	6CB6	6CK	
V6	4th Video IF	6CB6	6CB6	6CK	
V7	Video Amp. -AGC	6AH6	6AH6	7BK	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Det.	6AL5	6AL5	6BT	
V10	AF Amp.-Sync. Clipper	12AU7	12AU7	9A	
V11	Audio Output	6BF5	6BF5	7BZ	
V12	Sync. Sep.-Sync. Amp.	12AU7	12AU7	9A	
V13	Vert. Mult.-Vert. Output	6SN7GT	6SN7GT	8BD	
V14	Hor. AFC-Hor. Osc.	6SN7GT	6SN7GT	8BD	
V15	Hor. Output	6AV5GT	6AV5GT	6CK	
V16	Damper	6W4GT	6W4GT	4CG	
V17	HV Rect.	1X2	1X2	7BC	
V18	LV Rect.	5U4G	5U4G	5T	
V19	Picture Tube	12LP4A	12LP4A	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	30	450	N22422-5	AFH4-112		UPT425			▲ Decoupling
B	40	350							■ Filter
C	40	350							▲ Filter
D	10	200							Decoupling
C2A	10	475	N22422-6	AFH4-120		UPT426			▲ Decoupling
B	40	350							■ Vert. Output Dec.
C	80	200							▲ Output Cath. Byp.
D	100	50							Vert. Output Cath.
C3	5	150	N23025-2	PRS150/4		BR515			AGC Filter
C4	5	150	N23025-2	PRS150/4		BR515			Stabilizing Cap.
C5	4	300	N23714	PRS350/4		BR435			Output Screen Byp.
C6	47		SI47		D6-470		GP1K-47	5GA-Q47	RF Coupling
C7	1-6				829-6				Variable Trimmer
C8	1000			BPD-001	DD-102		801-001	5HK-D1	AGC Filter
C9	1000			BPD-001	DD-102		801-001	5HK-D1	RF Amp. Cath.
C10	1000			BPD-001	DD-102		801-001	5HK-D1	RF Bypass
C11	.5-3				829-3				Variable Trimmer
C12	13						NP0K-13		Fixed Padder
C13	1000			BPD-001	DD-102		801-001	5HK-D1	RF Amp. Plate Dec.
C14	1000			BPD-001	DD-102		801-001	5HK-D1	RF Amp. Plate Dec.
C15	14						NP0K-14		RF Coupling
C16	1000			BPD-001	DD-102		801-001	5HK-D1	Conv. Plate Dec.
C17	3.3			SI3.3NP0	TCZ-3.3		NP0K-3.3		Osc. Coupling
C18	8.2			SI8.2NP0			NP0K-8.2		Fixed Trimmer
C19	33			SI33	D6-330		GP1K-33	5GA-Q33	Osc. Grid Cap.
C20	14						NP0K-14		Fixed Trimmer
C21	1-6				829-6				Variable Trimmer
C22	.5-3				829-3				Variable Trimmer
C23	18				TCZ-18		NP0K-18		Fixed Padder
C24	82				TCZ-82		NP0M-82		Fixed Padder
C25	5						N220K-5		Fixed Trimmer
C26	1000			BPD-001	DD-102		801-001	5HK-D1	RF Bypass
C27	1000			BPD-001	DD-102		801-001	5HK-D1	Filament Bypass
C28	100			SI100	D6-101	5W5T1	GP1K-100	5GA-T1	IF Coupling
C29	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	AGC Filter
C30	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	RF Bypass
C31	610			SI680	D6-681	1W5T7	GP2K-680	5GA-T68	1st V. IF Dec.
C32	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	1st V. IF Fil.
C33	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	Filament Bypass
C34	47			SI47	D6-470	5W5Q5	GP1K-47	5GA-Q47	IF Coupling
C35	39						N330K-39		Fixed Trimmer
C36	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	AGC Filter
C37	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	AGC Filter *
C38	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	RF Bypass
C39	610			SI680	D6-681	1W5T7	GP2K-680	5GA-T68	2nd V. IF Dec.
C40	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	2nd V. IF Fil.
C41	22			SI22	D6-220	5W5Q25	GP1K-22	5GA-Q22	IF Coupling
C42	39						N330K-39		Fixed Trimmer
C43	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	AGC Filter
C44	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	AGC Filter
C45	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	RF Bypass
C46	610			SI680	D6-681	1W5T7	GP2K-680	5GA-T68	3rd V. IF Dec.
C47	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	3rd V. IF Fil.
C48	47			SI47	D6-470	5W5Q5	GP1K-47	5GA-Q47	IF Coupling
C49	610			SI680	D6-681	1W5T7	GP2K-680	5GA-T68	4th V. IF Dec.
C50	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	4th V. IF Cath.
C51	1000			BPD-001	DD-102	1W5D1	801-001	5HK-D1	4th V. IF Fil.
C52	7			SI6.8NP0	TCZ-6.8		NP0K-6.8		IF Coupling
C53	100			SI100	D6-101	5W5T1	GP1K-100	5GA-T1	IF Coupling
C54	1000			BPD-001	DD-102	1W5D1	801-001	5HK-T1	DAGC Decoupling
C55	5			SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	V. Diode Filter
C56	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C57	5			SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	V. Amp. Grid
C58	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C59	.04T	400		P488-047	DF-503	PTE4S5		4TM-S5	Pic. Tube Grid
C60	2.2				TCZ-2.2				S. IF Coupling
C61	33			SI33	D6-330	5W5Q3	GP1K-33	5GA-Q33	S. IF Coupling
C62	68						N220K-68		Fixed Trimmer
C63	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	S. IF Cath.
C64	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	S. IF Dec.
C65	5						N220K-5		Fixed Trimmer

CAPACITORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C66	330	500		SI330	D6-331	5W5T3	GP2K-330	5GA-T33	Diode Load Cap.
C67	.0022	600		P888-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	De-emphasis
C68	.0047	600		P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Audio Coupling
C69	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Audio Coupling
C70	.022	400		P488-022	DF-203	PTE4S2		4TM-S22	Audio Coupling
C71	.22	200		P488-22		GT2P25		2TM-P22	Bias Filter
C72	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Output Plate Byp.
C73	270			SI270	D6-271	5W5T25	GP2K-270	5GA-T27	Sync. Coupling
C74	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Sync. Coupling
C75	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Sync. Coupling
C76	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Sync. Coupling
C77	.0022	600		P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	Integrator Net.
C78	.0047	600		P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Integrator Net.
C79	.0047	600		P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Integrator Net.
C80	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Vert. Sync. Coupling
C81	1000	500		1467-001	D6-102	1W5D1	GP2L-001	1FM-Z1	Vert. Feedback
C82	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	Vert. MV Cath.
C83	.033	600		P688-033		PTE6S3		6TM-S3	Vert. Discharge
C84	33			SI33	D6-330	5W5Q4	GP1K-33	5GA-Q33	Hor. Sync. Coupling †
C85	.0022	600		P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	Hor. Sync. Coupling
C86	.22	200		P488-22		GT2P25		2TM-P22	AFC Filter
C87	.022	400		P488-022	DF-203	PTE4S2		4TM-S22	AFC Filter
C88	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Hor. AFC Plate
C89	390	500		1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	AFC Filter
C90	270	1000							Hor. Osc. Grid
C91	.01	600		P688-01		PTE6S1	821-01	6TM-S1	Fixed Trimmer
C92	.0015	600		P688-00015				6TM-D15	Hor. Discharge
C93	560	500		1469-0005	D6-561	5R5T5	GP2K-560	MS-35	Hor. Sweep Coupling
C94	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Hor. Output Screen
C95	.22	200		P488-22		GT2P25		2TM-P22	Hor. Output Cath.
C96	.1	1000		1084-1					Damper Filter
C97	.47	200		P288-47		GT2P5		2TM-P47	Hor. Sweep Coupling
C98	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Line Filter
C99	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Line Filter

* Not used in all models.
† Some models use 39MMF in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	2500Ω	½	E22464-21		RTV-92		Contrast control-front
B	1 Meg.						Volume control and switch-rear
R2A	5000Ω	½	E22464-14	Q11-114	AG-19-S	AN-10	Brightness control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	100KΩ	½	E22464-11	Q11-128	AG-49-S	AN-40	Vert. hold control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	2500Ω	½	E22464-12	Q11-112	AG-15-S	AN-7	Vert. linearity control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	2.5 Meg.	½	E22464-10	Q11-239	AG-84-S	AN-83	Height control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	50KΩ	½	E22464-13	Q11-123	AG-44-S	AN-31	Horiz. hold control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R6A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R7	330KΩ 20%	½		BTS-3300	AGC Filter Network
R8	560Ω	½		BTS-560	AGC Network
R9	68Ω 20%	½			RF Amp. Cathode
R10	3.9Ω	½			Parasitic Supp.-See Note 1
R11	330Ω 20%	½		BTS-330	RF Amp. Plate Decoupling
R12	560Ω	½			Converter Grid
R13	100KΩ 20%	½			Converter Grid
R14	10KΩ	½			Converter Plate
R15	330Ω 20%	½		BTS-330	Converter Plate Decoupling
R16	22KΩ	½			Osc. Coil Shunt
R17	10KΩ	½			Osc. Grid
R18	330Ω 20%	½		BTS-330	Osc. Plate
R19	8200Ω	½			1st Video IF Amp. Grid
R20	47Ω	½			1st Video IF Amp. Cathode
R21	470Ω	½		BTS-470	1st Video IF Amp. Decoupling
R22	1000Ω 20%	½		BTS-3300	AGC Network
R23	27KΩ 20%	½			1st Video IF Transformer Shunt
R24	18KΩ 5%	½			2nd Video IF Amp. Grid
R25	47Ω	½			2nd Video IF Amp. Cathode
R26	470Ω	½		BTS-470	2nd Video IF Amp. Decoupling
R27	150Ω	½		BTS-150	Voltage Divider
R28	3300Ω	½		BTS-3300	AGC Network
R29	18KΩ 5%	½			3rd Video IF Amp. Grid
R30	47Ω	½			3rd Video IF Amp. Cathode
R31	470Ω	½		BTS-470	3rd Video IF Amp. Decoupling
R32	150Ω	½		BTS-150	Voltage Divider
R33	56KΩ	½		BTS-56K	AGC Filter Network
R34	13KΩ 5%	½			4th Video IF Amp. Grid-See Note 2
R35	150Ω	½		BTS-150	4th Video IF Amp. Cathode
R36	470Ω	½		BTS-470	4th Video IF Amp. Decoupling
R37	6800Ω	½		BTS-6800	Video Det. Diode Load
R38	220KΩ	½		BTS-220K	AGC Diode Load
R39	1 Meg. 20%	½		BTS-1 Meg.	Video Amp. Grid
R40	68Ω	½		BW-½-68	Video Amp. Cathode
R41	330KΩ	½		BTS-330K	Voltage Divider
R42	5600Ω	½		BTA-5600	Video Amp. Plate
R43	470KΩ 20%	½		BTS-470K	Voltage Divider
R44	470KΩ 20%	½		BTS-470K	Picture Tube Cathode
R45	100KΩ 20%	½		BTS-100K	Voltage Divider
R46	22KΩ	½		BTS-22K	Voltage Divider
R47	100KΩ	½		BTS-100K	Sound IF Amp. Grid Load
R48	1000Ω 20%	½		BTS-1000	Sound IF Amp. Cathode
R49	1000Ω 20%	½		BTS-1000	Sound IF Amp. Decoupling

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
R50	47Ω	½		BW-½-47	Balancing
R51	27KΩ	½		BTS-27K	De-emphasis
R52	18KΩ	½		BTS-18K	Ratio Det. Diode Load
R53	4.7 Meg. 20%	½		BTS-4.7 Meg.	AF Amp. Grid
R54	470KΩ 20%	½		BTS-470K	AF Amp. Plate
R55	470KΩ 20%	½		BTS-470K	Output Grid
R56	160KΩ 5%	½			Output Grid
R57	180KΩ 5%	½		BTS-180K-5%	Voltage Divider
R58	470Ω	2		BTB-470	Output Cathode
R59	2200Ω 20%	1		BTA-2200	Output Screen
R60	220Ω 20%	1		BTA-220	Output Decoupling
R61	10KΩ 20%	½		BTS-10K	Isolation
R62	270KΩ	½		BTS-270K	Isolation
R63	2.2 Meg. 20%	½		BTS-2.2 Meg.	Sync. Amp. Grid
R64	47KΩ 5%	½		BTS-47K-5%	Sync. Amp. Plate
R65	15KΩ	½		BTS-15K	Voltage Divider
R66	220KΩ	½		BTS-220K	Sync. Sep. Cathode-See Note 3
R67	220KΩ	½		BTS-220K	Sync. Sep. Plate-See Note 3
R68	1 Meg. 20%	½		BTS-1 Meg.	Sync. Clipper Grid
R69	22KΩ	1		BTA-22K	Sync. Clipper Plate
R70	3300Ω	½		BTS-3300	Voltage Divider
R71	13KΩ 5%	½			Voltage Divider-See Note 2
R72	22KΩ	½		BTS-22K	Integrator
R73	8200Ω	½		BTS-8200	Integrator
R74	8200Ω	½		BTS-8200	Integrator
R75	100KΩ	½		BTS-100K	Vert. Osc. Grid
R76	56KΩ	½		BTS-56K	Vert. Osc. Cathode
R77	3.9 Meg.	½		BTS-3.9 Meg.	Vert. Osc. Plate
R78	2700Ω	½		BTS-2700	Vert. Output Cathode-See Note 4
R79	1000Ω 20%	½		BTS-1000	Vert. Peaking
R80	100KΩ 20%	½		BTS-100K	Vert. Feedback
R81	1500Ω 20%	½		BTS-1500	Vert. Output Decoupling
R82	820KΩ 5%	½		BTS-820K-5%	Horiz. AFC Grid
R83	150KΩ	½		BTS-150K	Horiz. AFC Cathode
R84	180KΩ 5%	1		BTA-180K-5%	Horiz. AFC Cathode
R85	8200Ω	½		BTS-8200	Horiz. AFC Filter
R86	2.7 Meg. 5%	1		BTA-2.7 Meg. 5%	Voltage Divider
R87	120KΩ	1		BTA-120K	Voltage Divider
R88	100KΩ 20%	½		BTS-100K	Voltage Divider
R89	120KΩ	1		BTA-120K	Horiz. Osc. Grid
R90	8200Ω	½		BTS-8200	Horiz. Osc. Transformer Shunt
R91	91KΩ 5%	1			Horiz. Osc. Plate
R92	470KΩ 20%	½		BTS-470K	Horiz. Feedback
R93	330Ω 20%	1			Parasitic Supp.
R94	1 Meg. 20%	½		BTS-1 Meg.	Horiz. Output Grid
R95	850Ω	10			Horiz. Output Cathode-Wire Wound
R96	1500Ω	10		1 3/4A-1500	Horiz. Output Screen-Wire Wound
R97	10KΩ 20%	½		BTS-10K	Filter
R98	470KΩ 20%	½		BTS-470K	Isolation
R99	100Ω 20%	½		BTS-100	Impedance Matching

Note 1. Some models use 4.7Ω resistor in this application.
Note 2. Some models use 12KΩ resistor in this application.
Note 3. Some models use 270KΩ resistor in this application.
Note 4. Some models use 3900Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 1.6A	600VCT .235ADC	5VAC ② 3A	6.3VAC ② 8.8A	N23397		P-3072	

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE PRI.	DC RESISTANCE SEC.	SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
T2	310Ω Tap ② 32Ω	18Ω Tap ② 14Ω SEC. 2 0Ω	N23089		HVO-6		Horiz. Output Trans.
T3	1000Ω Tap ② 12Ω		N22905-1	A-8123	A-3037	TSO-5 ①	Vert. Output Trans.
T4A B	27Ω 67Ω		N23085	DY-1	MD-70		Horiz. Deflection Coil Vert. Deflection Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
T5	2.2KΩ	2.9Ω	210Ω	.5Ω	N23490	A-3825	A-3018 ②	RO-305 ②	② Drill one new mounting hole.

SILVERTONE MODELS 106, 107, 141 (Ch. 132.889-2)

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	2.9Ω	N23347	ST-803	52A1	Models 106, 107
SP1	PM		N23609	MOD. P525-V	8A31	Model 141
	CONE DIA.	V. C. DIA.				
SP2	5 1/8"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.235ADC	49Ω	1.8 Henries	N22561-1	C-2326 ①	C-2996	TR-3300 ①	① Drill one new mounting hole.

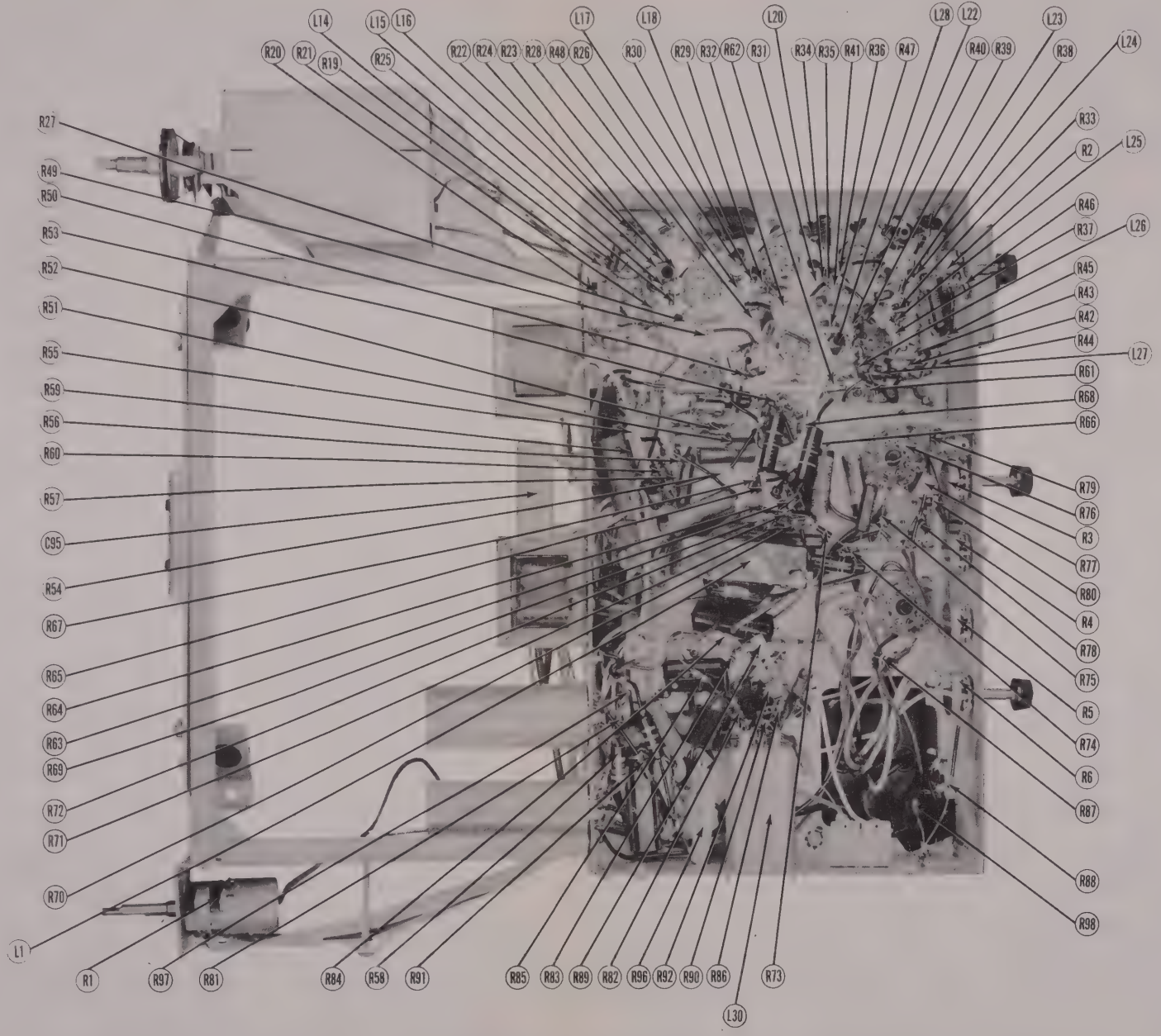
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SILVERTONE PART No.		
L2	Ant. Trans.	0Ω	0Ω			
L3	Ant. Trans.	0Ω	0Ω	N23112		Hi-Band, part of tuner #. N23054-2
L4	IF Trap	.5Ω		NA23502-1		Low-Band
L5	RF Coil	0Ω				
L6	RF Coil	0Ω				Hi-Band, part of tuner #. N23054-2
L7	Osc. Coil	0Ω				Low-Band, part of tuner #. N23054-2
L8	Osc. Coil	0Ω				Hi-Band, part of tuner #. N23054-2
L9	RF Choke	.5Ω		NA23502-1		Low-Band, part of tuner N23054-2
L10	Fil. Choke	0Ω		NA23334-1		
L11	Fil. Choke	0Ω		NA23334-1		
L12	Fil. Choke	0Ω		NA23334-1		
L13	1st Video IF	.1Ω		N23091-1		
L14	Fil. Choke	0Ω		N23095		
L15	2nd Video IF	.1Ω		N23614		Includes trap
L16	Fil. Choke	0Ω		N23095		
L17	3rd Video IF	.1Ω		N23672		Includes trap
L18	Fil. Choke	0Ω		N23095		
L19	4th Video IF	.1Ω		N23673-1		
L20	Fil. Choke	0Ω		N23095		
L21	5th Video IF	.1Ω		N23673-2		
L22	Peaking	2Ω		N22500-6		20 microhenries, yellow dot
L23	Peaking	8Ω		N22500-9		250 microhenries, violet dot, wound on 47KΩ res.
L24	Peaking	7.5Ω		N22500-3		250 microhenries, green dot
L25	Peaking	1Ω		N22500-10		Approximately 5.2 microhenries
L26	Peaking	9Ω		N22500-11		300 microhenries, yellow dot, wound on 33KΩ res.
L27	Peaking	11Ω		N22500-12		450 microhenries, blue dot
L28	Sound IF	1.2Ω		N23093		
L29	Ratio Det. Trans.	6Ω	2Ω	N23094		
L30	Horiz. Osc. Trans.	77Ω	48Ω	N22563		
L31	Width Coil	4Ω		N22562		
L32	Para. Supp.	0Ω				Wound on 3.9Ω, used in early production sets only.

† Parallel with 47KΩ resistor.
* Parallel with 33KΩ resistor.

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M1	RF Tuner	NE23054-2	Complete
M2	Fuse	N22493	.25A 250V Type GJV
M3	Crystal	N23261	Video Det. 1N-64
M4	Crystal	N23261	AGC Rect. 1N-64
M5	Switch	N23245	TV-Phono
M6	Switch	N22868	Power Interlock
M7	Ion Trap	N22568	
M8	Focus Magnet	N23058-2	
B4, 3	Trimmer	N23130-2	Two section, Horiz. Drive 10-160MMF., Horiz. Lock 3-35MMF.
	Safety Glass	N23433	Model 106
	Safety Glass	N23317	Models 107 and 141
	Knob	N23022-1	Band Change
	Knob	N23020-1	Channel Selector
	Knob	N23023-1	Contrast
	Knob	N23021-1	Volume
	Knob	N23686-2	Horiz. Hold
	Knob	N22686-1	Vert. Hold
	Knob	N22686-3	Brightness



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1

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MODEL 37BB1

STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1

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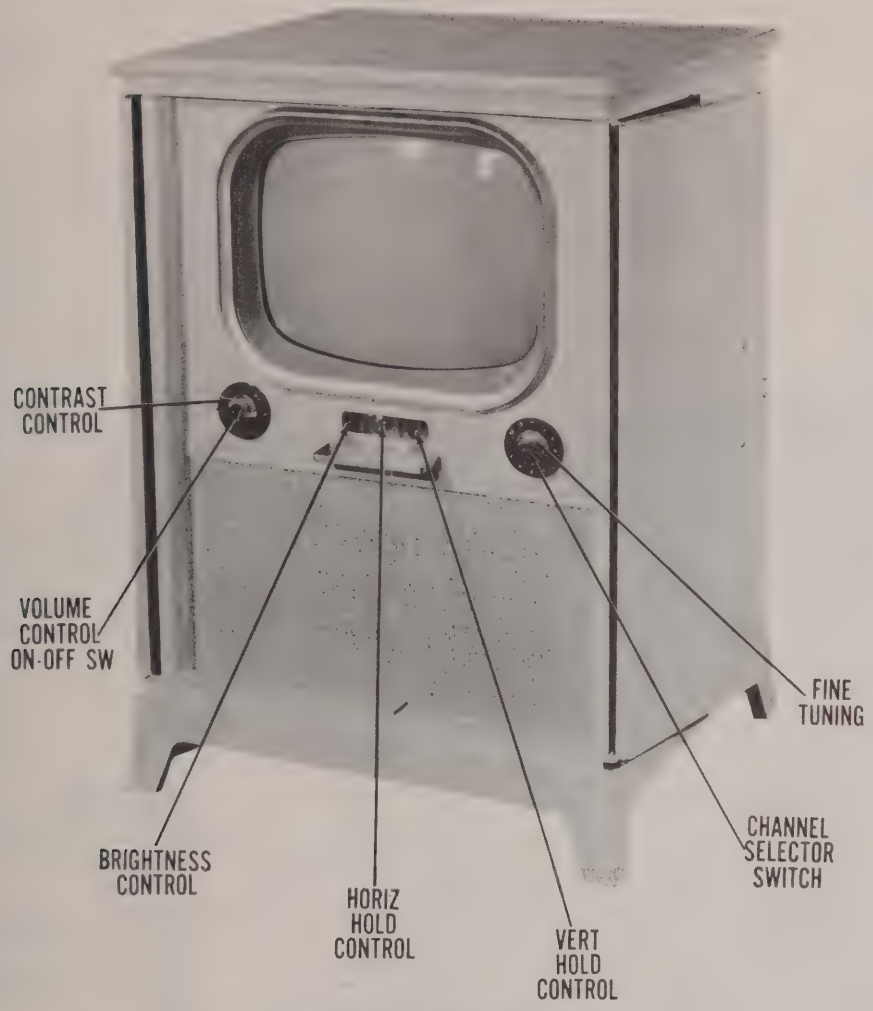

STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1

STARRETT MODEL 37BB1

TRADE NAME	Starrett, Models 17BM1 (Ch. 12S1), 20BM1 (Ch. 15S1), 27BM1 (Ch. 12S1), 29AM1 (Ch. 14S1), 30BM1 (Ch. 15S1), 37BB1, 37BM1 (Ch. 12S1), 39AM1 (Ch. 14S1)
MANUFACTURER	Starrett Television Corp., 601 W. 26th. St., New York, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	105-125 Volts AC 60 Cycle — RATING 1.7 Amp. at 117 Volts AC
TUNING RANGE—CHANNELS	2 thru 13

INDEX

Alignment Instructions 6
Disassembly Instructions 10
Horizontal Sweep Circuit Adjustments 10
Parts List and Description 12, 13, 15
Photographs
- Cabinet - Rear View 10
- Capacitor and Alignment Identification 4, 9
- Chassis - Top View 3
- RF Tuner 7
- Resistor and Inductor Identification 11, 14

Schematic 2
Tube Placement Charts 5
Voltage and Resistance Measurements 8

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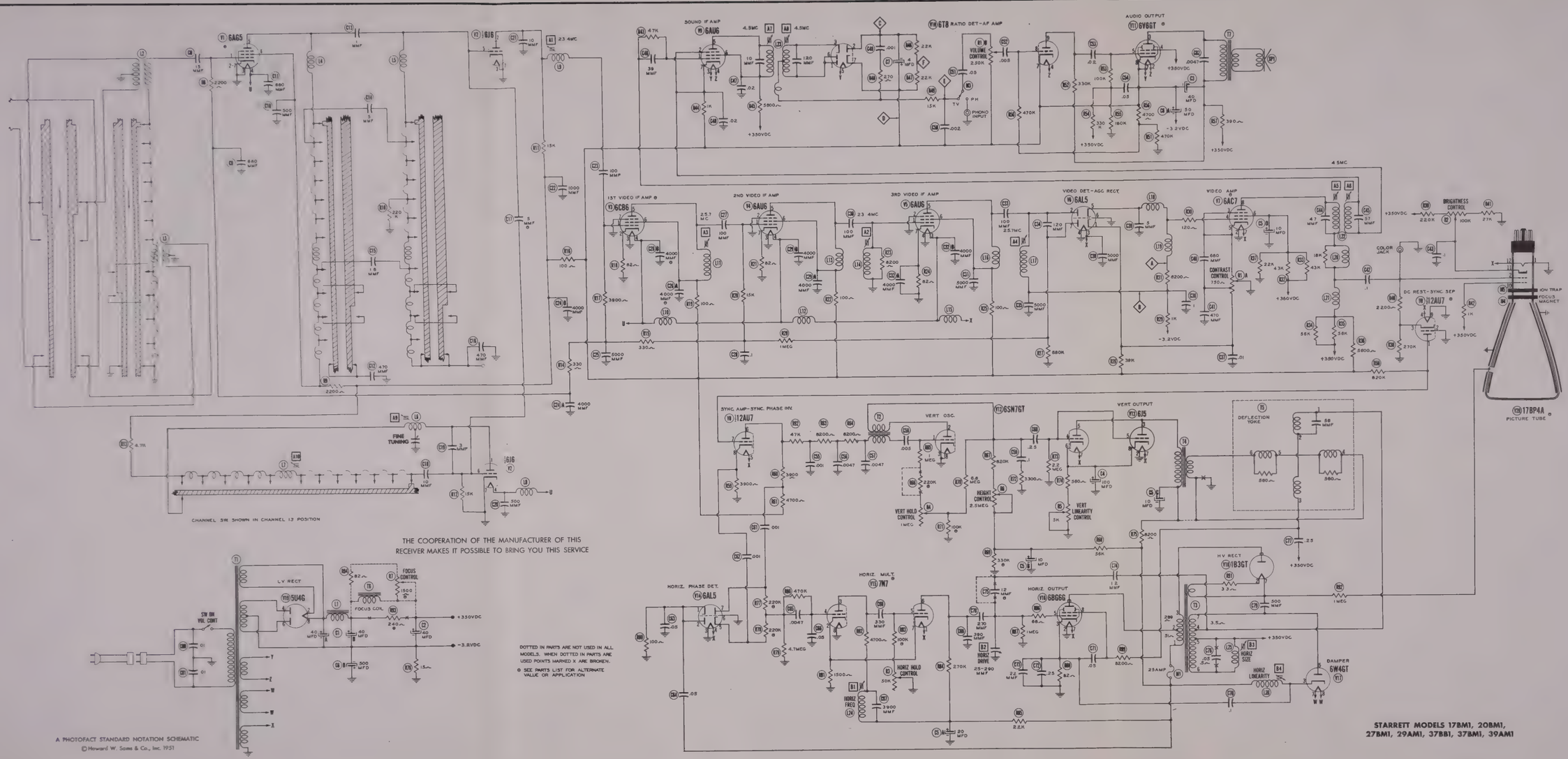

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⊙ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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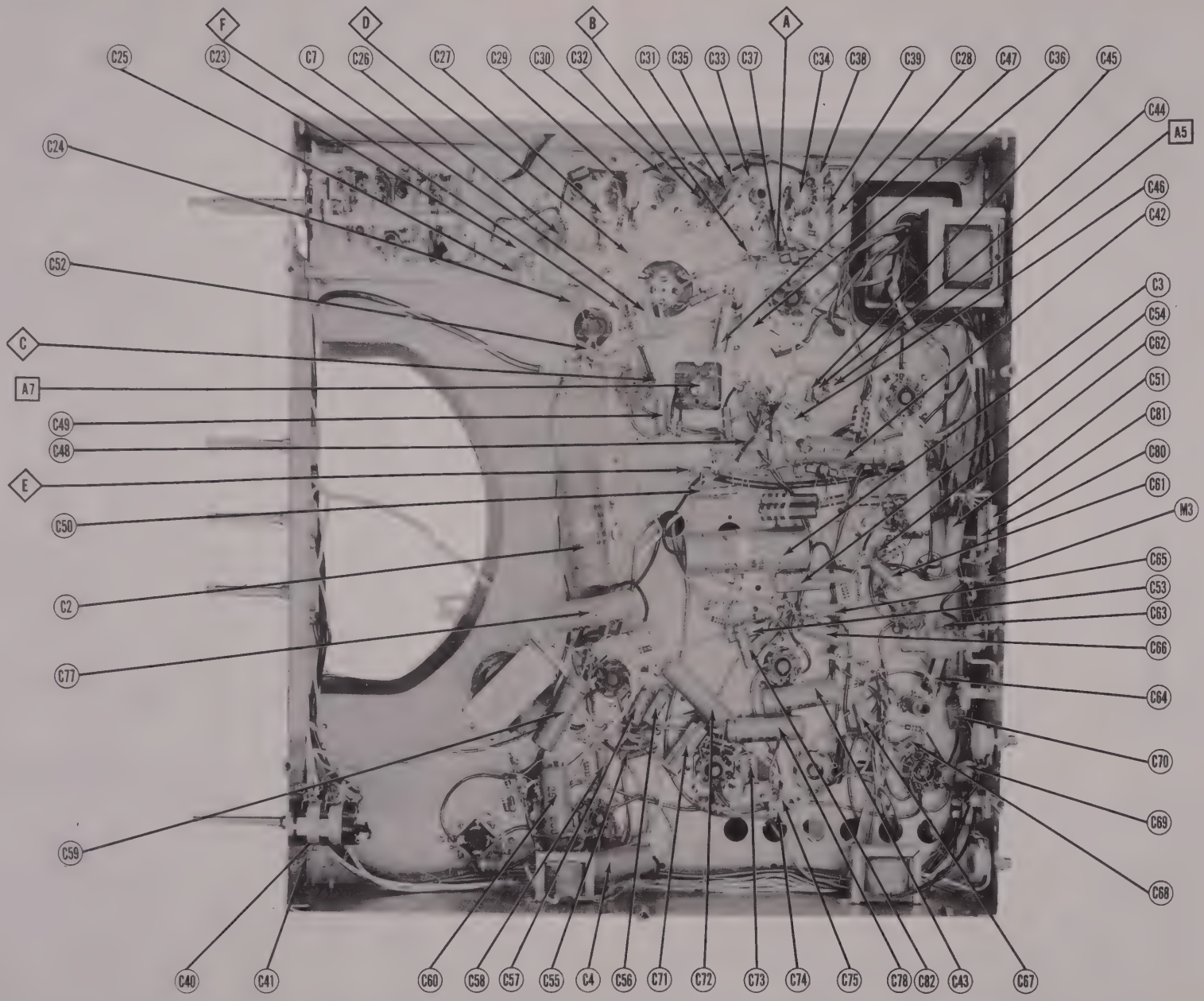
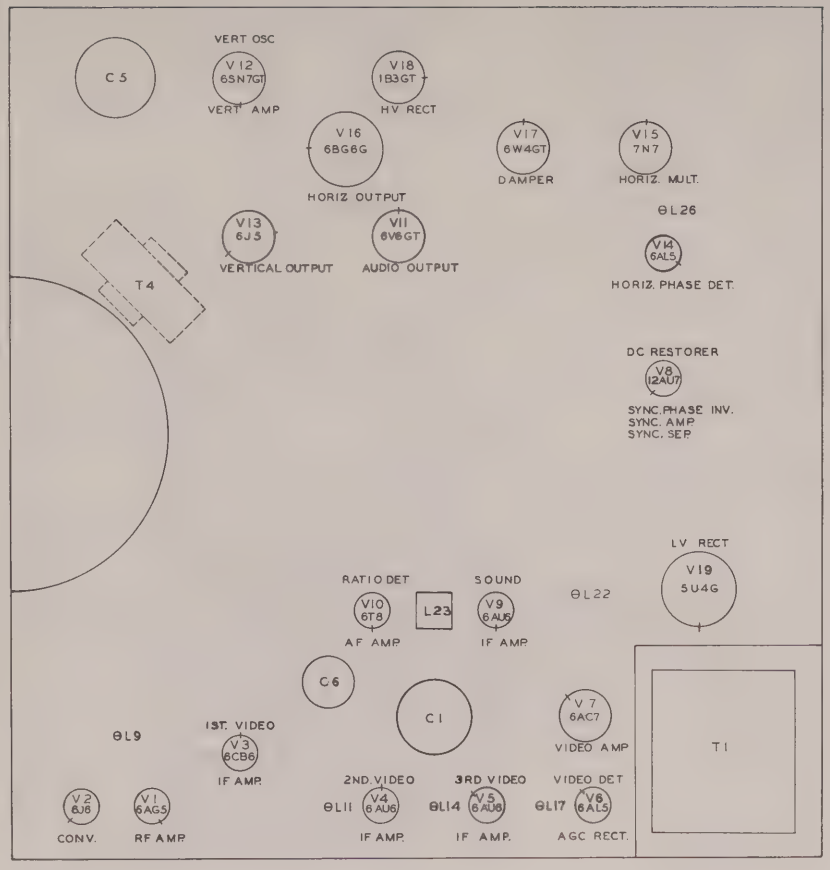
STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1

STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1

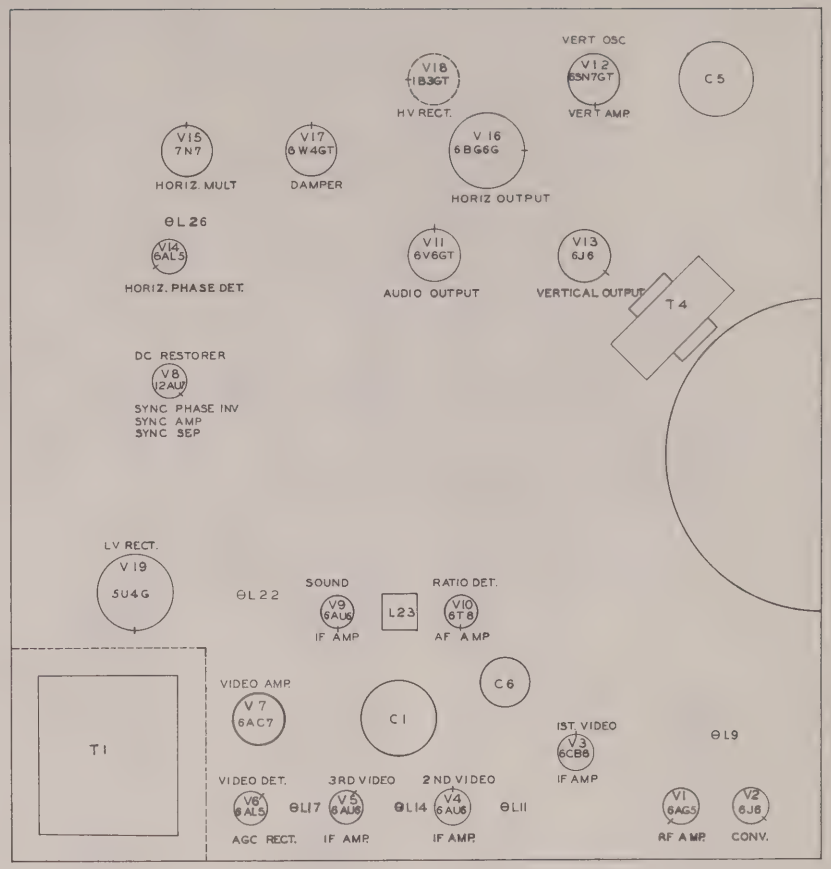
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

STARRETT MODELS 17BM1, 20BM1, 27BM1, 29AM1, 37BB1, 37BM1, 39AM1

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V15), from the socket.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
During video IF alignment the common lead of the VTVM is connected to approximately 2½ volts with respect to chassis. Avoid grounding the VTVM case.
Connect a short across C28.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	23.4MC (unmod.)	Any	DC probe to Point (A). Common to Point (B).	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain 2 volt reading.
2.	"	"	25.7MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Remove the short from C28.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.6MC 26.1MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

During sound IF alignment the common lead of the VTVM is connected to approximately 140 volts with respect to chassis.
Avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD.	High side to pin 4 (Grid), of 6AC7, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (C). Common to Point (D).	A5, A6, A7	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to Point (E). Common to Point (F).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD.	High side to pin 4, (grid) of 6AC7, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A5, A6, A7	Disconnect stabilizer capacitor C7. Adjust for maximum amplitude and symmetry as per fig. 2.
5.	"	"	"	"	"	Vert. Amp. to Point (E). Low side to chassis.	A8	Reconnect capacitor C7. Adjust A8 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A9	Adjust to place sound marker as shown in fig. 4. The video marker should be at 50%.
7.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all high band channels to see that the markers can be properly placed well within the range of the fine tuning control. If not make compromise adjustment of A9.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
8.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A10	Adjust to place sound marker as shown in fig. 4. The video marker should be at 50%.
9.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check all low band channels to see that the markers can be properly placed well within the range of the fine tuning control. If not make compromise adjustment of A10.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

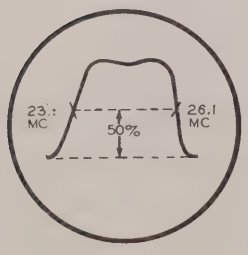


FIG. 1

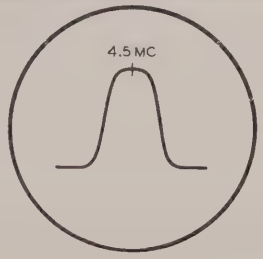


FIG. 2

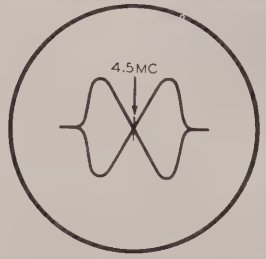


FIG. 3

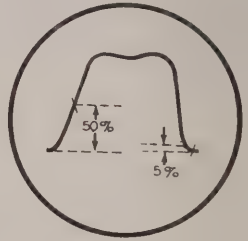
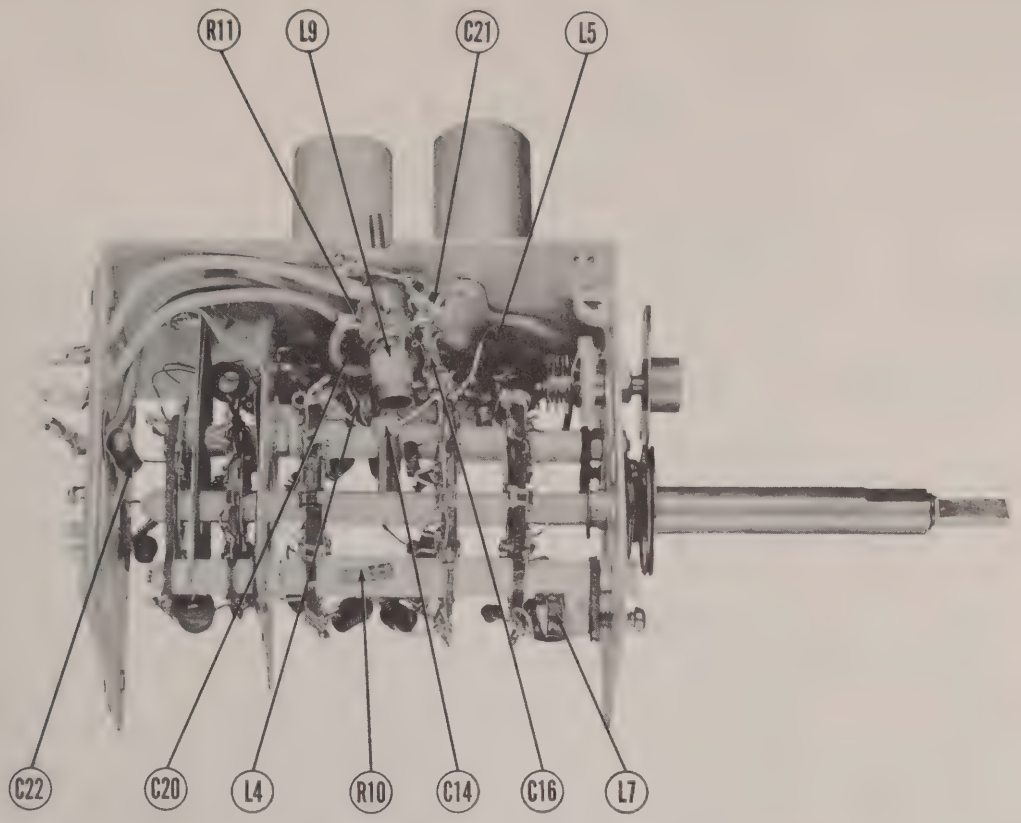
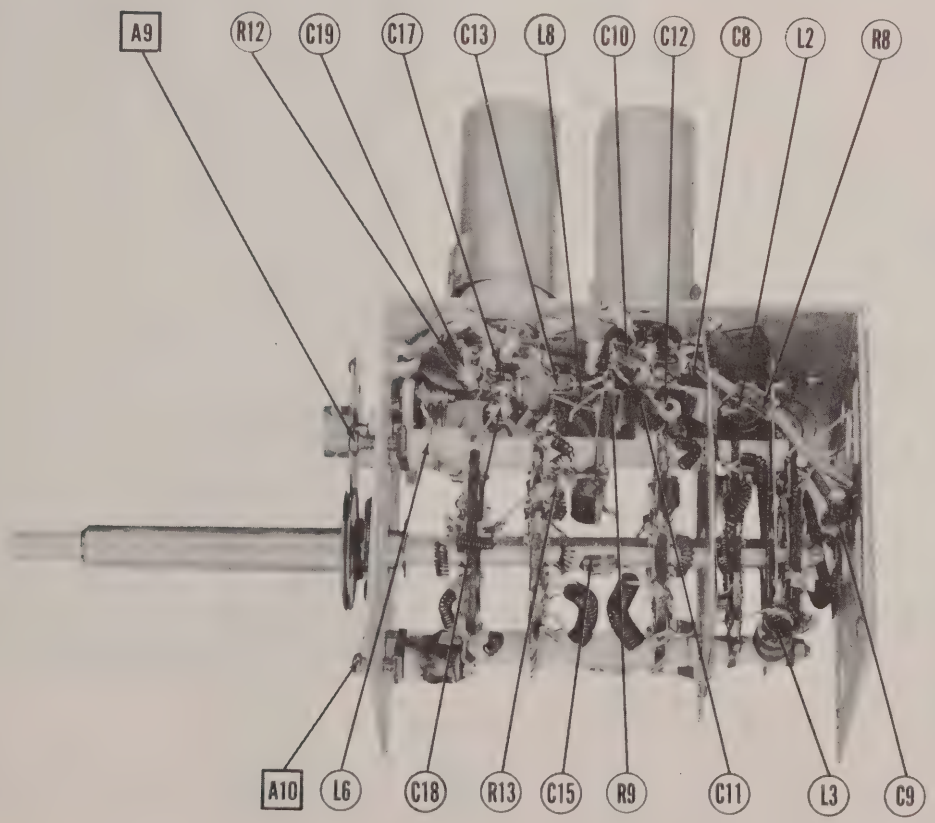


FIG. 4



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.6VDC	0V	6.3VAC	0V	105VDC	105VDC	0V		
V 2	6J6	100VDC	85VDC	0V	6.3VAC	-1.2VDC	§-3.1VDC	0V		
V 3	6CB6	-.3VDC	.9VDC	0V	6.2VAC	140VDC	140VDC	0V		
V 4	6AU6	-.3VDC	0V	0V	6.2VAC	140VDC	140VDC	.8VDC		
V 5	6AU6	0V	0V	6.2VAC	0V	140VDC	140VDC	.9VDC		
V 6	6AL5	0V	-3VDC	6.3VAC	0V	-2.4VDC	0V	- 1.2VDC		
V 7	6AC7	0V	0V	1VDC	-2.4VDC	1VDC	170VDC	6.3VAC	170VDC	
V 8	12AU7	28VDC	0V	2.5VDC	6.3VAC	6.3VAC	85VDC	28VDC	28VDC	0V
V 9	6AU6	¶8.8VDC	¶13VDC	¶0V	¶6.3VAC	¶125VDC	¶125VDC	¶13VDC		
V 10	6T8	¶-.6VDC	¶-.5VDC	¶-.6VDC	¶6.3VAC	¶0V	¶-.6VDC	¶0V	¶-.7VDC	¶185VDC
V 11	6V6GT	0V	¶6.3VAC	¶170VDC	¶205VDC	¶-8VDC	0V	¶0V	¶0V	
V 12	6SN7GT	§-60VDC §-80VDC	145VDC 200VDC	0V	§0V §-7.6VDC	380VDC	8VDC 32VDC	6.3VAC	0V	
V 13	6J5	0V	0V	390VDC	0V	0V -2.8VDC	0V	6.3VAC	8VDC 32VDC	
V 14	6AL5	0V	0V	0V	6.3VAC	8VDC	0V	-11.8VDC		
V 15	7N7	6.3VAC	12VDC	310VDC	§-2.4VDC	§-7.4VDC §-10VDC	115VDC	12VDC	0V	
V 16	6BG6G	0V	0V	7.6VDC	7.6VDC	-8.7VDC	350VDC	6.3VAC	265VDC	Top Cap *
V 17	6W4GT	0V	0V	530VDC	0V	350VDC	0V	▲6.3VAC	▲6.3VAC	
V 18	1B3GT	* DO NOT MEASURE								Top Cap *
V 19	5U4GT	0V	400VDC	0V	360VAC	0V	360VAC	350VDC	400VDC	
V 20	17BP4A	0V	2.6VDC	PIN 10 340VDC	PIN 11 30VDC 120VDC	PIN 12 6.3VAC	H. V. CONNECTOR ** 11K.V.			

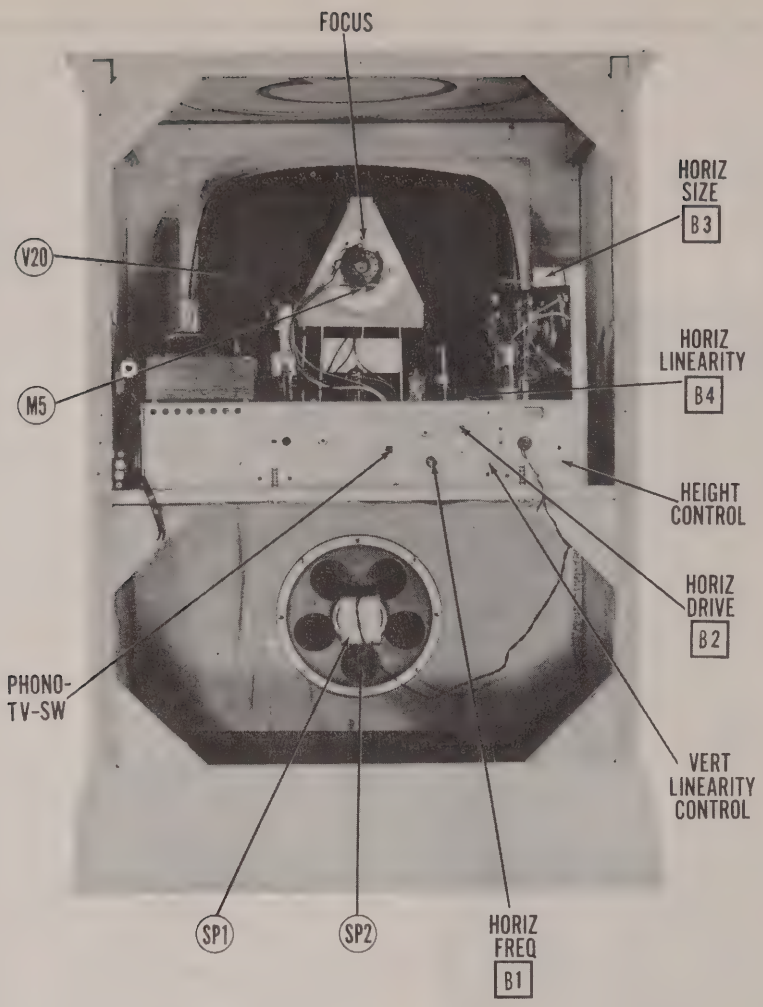
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
¶ MEASURED FROM PIN 8 OF V11
▲ MEASURED ACROSS FILAMENTS
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.6Meg	0Ω	.1Ω	0Ω	¶2.3KΩ	¶2.3KΩ	0Ω		
V 2	6J6	¶4.8KΩ	¶15KΩ	0Ω	.2Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	1.6Meg	82Ω	0Ω	.1Ω	¶100Ω	¶100Ω	0Ω		
V 4	6AU6	1.7Meg	0Ω	0Ω	.1Ω	¶100Ω	¶100Ω	82Ω		
V 5	6AU6	.2Ω	0Ω	.1Ω	0Ω	¶100Ω	¶100Ω	82Ω		
V 6	6AL5	0Ω	1KΩ	.1Ω	0Ω	9.2KΩ	0Ω	680KΩ		
V 7	6AC7	0Ω	0Ω	750Ω	9.3KΩ	750Ω	†16KΩ	.1Ω	†15KΩ	
V 8	12AU7	¶820KΩ	0Ω	270KΩ	.1Ω	.1Ω	¶8.5KΩ	¶820KΩ	3.9KΩ	0Ω
V 9	6AU6	¶47KΩ	¶1KΩ	¶0Ω	¶.1Ω	†5.8KΩ	†5.8KΩ	¶1KΩ		
V 10	6T8	¶Inf.	¶44KΩ	¶Inf.	¶.1Ω	¶0Ω	¶Inf.	¶0Ω	¶470KΩ	†330KΩ
V 11	6V6GT	Inf.	¶.1Ω	†1KΩ	†300Ω	†240KΩ	Inf.	¶0Ω	¶0Ω	
V 12	6SN7GT	2.3Meg 1.3Meg	#2Meg #800KΩ	0Ω	2.2Meg	#9.5KΩ	1.5KΩ 560KΩ	.1Ω	0Ω	
V 13	6J6	0Ω	0Ω	#9.5KΩ	Inf.	2.2Meg	Inf.	.1Ω	1.5KΩ 560Ω	
V 14	6AL5	100Ω	100Ω	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 15	7N7	.1Ω	1.5KΩ	#26KΩ	5.1Meg	150KΩ 100KΩ	#290KΩ	1.5KΩ	0Ω	
V 16	6BG6G	Inf.	0Ω	82Ω	82Ω	1Meg	†300Ω	.1Ω	†8.5KΩ	Top Cap #90Ω
V 17	6W4GT	Inf.	Inf.	180KΩ	Inf.	†300Ω	Inf.	▲.1Ω	▲.1Ω	
V 18	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #340Ω
V 19	5U4G	Inf.	22KΩ	Inf.	75Ω	Inf.	73Ω	†300Ω	22KΩ	
V 20	17BP4A	0Ω	270KΩ	PIN 10 †1.2KΩ	PIN 11 †100KΩ †40KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V19
# MEASURED FROM PIN 3 OF V17
¶ MEASURED FROM PIN 8 OF V11
▲ MEASURED ACROSS FILAMENTS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), counter-clockwise until white beaded vertical lines appear in the raster, and then clockwise just enough to remove the lines.

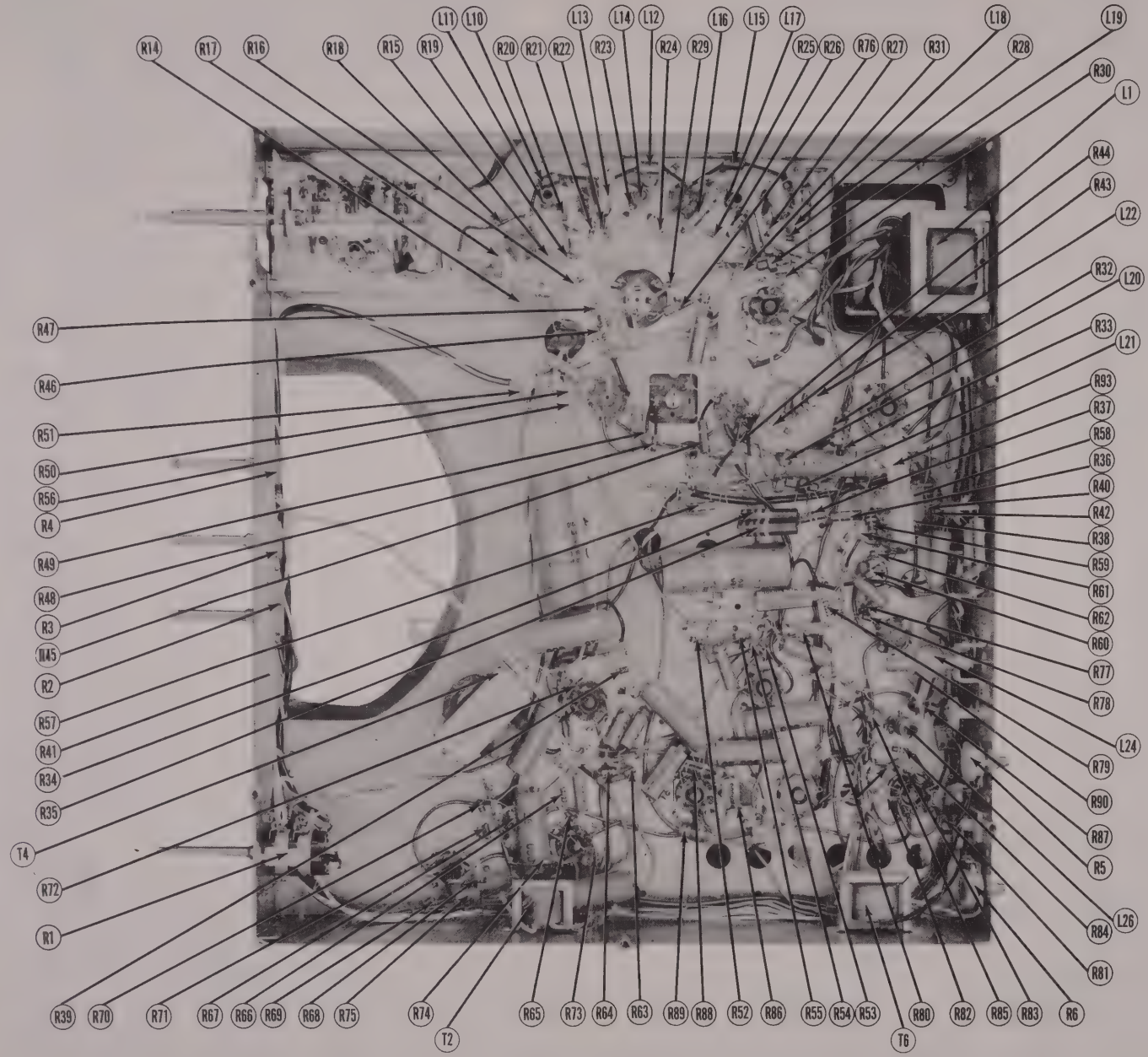
Adjust the horizontal size slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove nine wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker.
6. Remove five 5/16" hex head bolts from chassis. Remove chassis.
7. Remove four 11/32" hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA STARRETT PART No.	REPLACEMENT DATA ANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6AG5	6AG5	7BD	
B	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3A	1st. Video IF Amp.	6CB6	6CB6	7CM	
B	1st. Video IF Amp.	6BC5	6BC5	7BD	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Detector - AGC Rectifier	6AL5	6AL5	6BT	
V7A	Video Amplifier	6AC7	6AC7	8N	
B	Video Amplifier	6AH6	6AH6	7BK	
V8A	DC Restorer - Sync Separator - Sync. Amplifier - Sync. Phase Inverter	12AU7	12AU7	9A	
B	DC Restorer - Sync Separator - Sync. Amplifier - Sync. Phase Inverter	12AV7	12AV7	9A	
C	DC Restorer - Sync Separator - Sync. Amplifier - Sync. Phase Inverter	12AZ7	12AZ7		
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector - AF Amplifier	6T8	6T8	9E	
V11A	Audio Output	6V6GT	6V6GT	7AC	
B	Audio Output	6AQ5	6AQ5	7BZ	
C	Audio Output	6K6GT	6K6GT	7S	
V12	Vert. Oscillator - Vert. Amplifier	6SN7GT	6SN7GT	8BD	
V13	Vertical Output	6J5	6J5	6Q	
V14	Horiz. Phase Det.	6AL5	6AL5	6BT	
V15A	Horiz. Mult.	7N7	7N7	8AC	
B	Horiz. Mult.	6SN7GT	6SN7GT	8BD	Used in some models.
V16	Horiz. Output	6BG6G	6BG6G	5BT	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA STARRETT PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V20A	17BP4A	17BP4A	17BP4	12D	Chassis 12S1
B	19AP4	19AP4		12D	Chassis 14S1
C	20CP4	20CP4	20CP4	12D	Chassis 15S1
D	20DP4	20DP4		12D	Chassis 15S1

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA STARRETT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AFH2-57		UP4445		TVL-2764	▲ Filter
B	40	450							■ Filter
C2	40	450		PRS450/40		BR4045A		TVA-1712	Filter
C3	40	450		PRS450/40		BR4045A		TVA-1712	Audio Output Dec.
C4	100	25		PRS25/100		BRH251A		TVA-1207	Vert. Amp. Cathode
C5A	20	450		AFH4-13		UPT21145		TVL-4826	▲ Horiz. Mv Dec.
B	10	450							■ Vert. Osc. Dec.
C	10	450							▲ Vert. Amp. Dec. Video Amp. Screen
D	10	150							
C6A	50	150		AFH1-18		UP5015		TVL-1415	■ Decoupling
B	500	5		PRS5/500		BRH605A		TVA-1103	▲ Bias Filter
C7	4	25		PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C8	15			SI15	D6-150		GP1K-150	5GA-Q15	RF Coupling
C9	680			SI680	D6-681		GP2K-681	5GA-T68	AGC Filter
C10	500			SI500	D6-501		GP2K-501	5GA-T5	RF Amp. Dec.
C11	680			SI680	D6-681		GP2K-681	5GA-T68	RF Amp. Fil.
C12	470			SI470	D6-470		GP2K-471	5GA-T47	RF Amp. Plate
C13	1				TCZ-1		NP0K-010		RF Coupling
C14	.5				TCZ-.5		NP0K-R50		RF Coupling
C15	1.8						NP0K-1R8		RF Coupling
C16	470			SI470	D6-470		GP2K-471	5GA-T47	Mixer Grid Filter
C17	5			SI5NP0	TCZ-4.7		NP0K-050		Osc. Coupling
C18	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Osc. Grid Cap.
C19	3						N333K-030		Osc. Feedback
C20	500			SI500	D6-501		GP2K-501	5GA-T5	Conv. Fil.
C21	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C22	1000			BPD-001	DD-102		801-001	5HK-D1	RF Bypass
C23	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C24A	4000			BPD-2K004	D6-402	1D5D4	822-004	5HK-2D4	AGC Filter
B	4000				D6-402	1D5D4			RF Bypass
C25	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C26A	4000			BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	1st. Video IF Dec. †
B	4000				D6-402	1D5D4			1st. Video IF Fil. †
C27	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C28	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C29A	4000			BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	2nd. Video IF Dec.
B	4000				D6-402	1D5D4			2nd. Video IF Fil.
C30	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C31	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Dec.
C32A	4000			BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	3rd. Video IF Calbode
B	4000				D6-402	1D5D4			3rd. Video IF Cathode
C33	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C34	120	500		1468-00015	D6-121	5W5T15	GP2K-121	1FM-315	IF Coupling
C35	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C36	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	Bias Filter
C37	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	RF Bypass
C38	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	Video Det. Fil.

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA STARRETT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C39	5	500		1469-000005	TCZ-4.7	5R5V5	NP0K-050	MS-55	Video Det. Filter
C40	680			SI680	D6-681	1W5T47	GP2K-681	5GA-T68	Contrast Contr. Shunt
C41	470			SI470	D6-471	5W5T5	GP2K-471	5GA-T47	Video Amp. Cathode
C42	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C43	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Picture Tube Cathode
C44	47			SI47N750	TCN-47		N750K-470	5TCU-Q47	Fixed Trimmer
C45	57				TCN-56		N570K-570		Fixed Trimmer
C46	39	500		1468-00004	D6-390	5W5Q4	GP1K-390	1FM-44	Sound IF Coupling
C47	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Sound IF Decoupling
C48	.02	600		P688-02	DF-203	PTE6S5		6TM-S2	Sound IF Cathode
C49	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	RF Bypass
C50	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	De-emphasis
C51	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C52	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C53	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C54	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Output Grid Dec.
C55	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Vert. Integrator Net.
C56	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Integrator Net.
C57	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Integrator Net.
C58	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Osc. Grid
C59	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert. Discharge
C60	.25	600		684-25		GP6P25		6TM-P25	Vert. Sweep Coupling
C61	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C62	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C63	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AFC Filter
C64	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Sweep Coupling
C65	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	AFC Filter
C66	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	Horiz. MV Grid
C67	3900	500		1464-004		1DR5D4			Fixed Trimmer
C68	330	500		1468-00035	D6-331		GP2K-331	1FM-335	Horiz. MV Feedback
C69	390	500		1468-0004	D6-391	5W5T4	GP2K-391	1FM-34	Horiz. Discharge
C70	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Horiz. Sweep Coupling
C71	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C72	.25	200		P488-25		GT2P25		2TM-P25	Horiz. Output Cathode
C73	22	500		1468-00025	D6-220	5W5Q25	GP1K-220	MS-425	Horiz. Output Cathode
C74	12	1500							Horiz. Feedback *
C75	12	1500							Horiz. Feedback *
C76	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Fixed Trimmer
C77	.25	600		684-25		GP6P25		6TM-P25	Hofiz. Sweep Coupling
C78	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Damper Filter
C79	500	20000		HV-20C	TV3-502				HV Filter
C80	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C81	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C82	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Output Plate

* Not used in all models.
† Some models use 5000MMF. in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STARRETT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	750Ω	2	PT-1002		RTV-252		Contrast Control - Tapped at 500Ω - Wire Wound - Front
B	250KΩ	½					Volume Control and SW - Rear
R2A	100KΩ	½	PT-1007	Q11-128	AG-49-S	AN-40	Brightness Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	50KΩ	½	PT-1009	Q11-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	1Meg	½	PT-1008	Q11-137	AG-61-S	AN-69	Vert. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R4A per instructions
R5A	5000Ω	½	PT-1004	Q11-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	2.5Meg	½	PT-1005	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7	1500Ω	4					Focus Control - Wire Wound - See Note 1

Note 1 Not used in all models.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STARRETT PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R8	2200Ω 20%	½		BTS-2200	RF Amp. Grid
R9	2200Ω 20%	½		BTS-2200	RF Amp. Decoupling
R10	220KΩ 20%	½		BTS-220K	Mixer Grid
R11	15KΩ 20%	½		BTS-15K	Mixer Plate
R12	15KΩ 20%	½			Osc. Grid
R13	4700Ω	½		BTS-4700	Osc. Plate
R14	330Ω	½		BTS-330	AGC Network
R15	330Ω	½		BTS-330	AGC Network
R16	100Ω	½		BTS-100	Decoupling
R17	39000	½		BTS-3900	1st. Video IF Amp. Grid - See Note 3
R18	82Ω	½		BTS-82	1st. Video IF Amp. Cathode
R19	100Ω	½		BTS-100	1st. Video IF Amp. Decoupling
R20	15KΩ	½			2nd. Video IF Amp. Grid
R21	82Ω	½		BTS-82	2nd. Video IF Amp. Cathode
R22	100Ω	½		BTS-100	2nd. Video IF Amp. Decoupling
R23	8200Ω	½		BTS-8200	3rd. Video IF Transformer Shunt
R24	82Ω	½		BTS-82	3rd. Video IF Amp. Cathode
R25	100Ω	½		BTS-100	3rd. Video IF Amp. Decoupling
R26	39KΩ	1		BTA-39K	Voltage Divider
R27	680KΩ	½		BTS-680K	AGC Load
R28	1Meg	½		BTS-1Meg	AGC Network
R29	1000Ω	½		BTS-1000	Bias Network
R30	120Ω	½			Parasitic Suppressor
R31	8200Ω	½		BTS-8200	Video Det. Diode Load
R32	43KΩ 5%	2			Video Amp. Screen
R33	43KΩ 5%	2			Video Amp. Screen
R34	56KΩ	2		BTB-56K	Video Amp. Plate
R35	56KΩ	2		BTB-56K	Video Amp. Plate
R36	5600Ω	1		BTA-5600	Voltage Divider
R37	22KΩ	1		BTA-22K	Voltage Divider
R38	270KΩ	½		BTS-270K	DC Restorer Diode Load
R39	220KΩ	½		BTS-220K	Voltage Divider

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STARRETT PART No.	IRC PART No.	IDENTIFICATION CODES
R40	2200Ω	½		BTS-2200	Picture Tube Grid
R41	27KΩ 20%	½		BTS-27K	Picture Tube Cathode
R42	1000Ω	½		BTS-1000	Acc. Anode Load
R43	47KΩ 20%	½		BTS-47K	Sound IF Amp. Grid
R44	1000Ω	½		BTS-1000	Sound IF Amp. Cathode
R45	5600Ω	1		BTA-5600	Sound IF Amp. Decoupling
R46	22KΩ	½		BTS-22K	Ratio Det. Diode Load
R47	22KΩ	½		BTS-22K	Ratio Det. Diode Load
R48	270Ω 20%	½		BTS-270	Balancing
R49	15KΩ	½		BTS-15K	De-emphasis
R50	470KΩ	½		BTS-470K	AF Amp. Grid
R51	470KΩ	½		BTS-470K	AF Amp. Grid
R52	330KΩ	½		BTS-330K	AF Amp. Plate
R53	100KΩ 20%	½		BTS-100KΩ	Output Grid
R54	330KΩ 5%	½		BTS-330K-5%	Bias Network
R55	180KΩ 5%	½		BTS-180K-5%	Bias Network
R56	4700Ω 20%	½		BTS-4700	Bias Network
R57	390Ω	1		BTA-390	Decoupling
R58	820KΩ	½		BTS-820K	Sync. Sep. Plate
R59	3900Ω	½		BTS-3900	Sync. Phase Inv. Cathode
R60	3900Ω	½		BTS-3900	Sync. Phase Inv. Plate
R61	4700Ω 20%	½		BTS-4700	Sync. Phase Inv. Plate
R62	47KΩ 20%	½		BTS-47K	Integrator
R63	8200Ω	½		BTS-8200	Integrator
R64	8200Ω	½		BTS-8200	Integrator
R65	1Meg	½		BTS-1Meg	Vert. Osc. Grid
R66	220KΩ	½		BTS-220K	Vert. Osc. Grid - See Note 2
R67	820KΩ	½		BTS-820K	Vert. Osc. Plate
R68	56KΩ	½		BTS-56K	Vert. Osc. Decoupling
R69	330KΩ	1		BTB-330K	Voltage Divider - See Note 6
R70	6.8Meg	½		BTS-6.8Meg	Voltage Divider
R71	100KΩ	½		BTS-100K	Voltage Divider - See Note 6
R72	3300Ω	½		BTS-3300	Vert. Peaking
R73	2.2Meg	½		BTS-2.2Meg	Vert. Amp. Grid
R74	560Ω	½		BTS-560	Vert. Amp. Cathode
R75	8200Ω	2		BTB-8200	Vert. Amp. Decoupling
R76	15Ω	1		BW-1-15	Bias Network
R77	220KΩ	½		BTS-220K	Horiz. Phase Det. Diode Load - See Note 4
R78	220KΩ	½		BTS-220K	Horiz. Phase Det. Diode Load - See Note 4
R79	4.7Meg	½		BTS-4.7Meg	Horiz. Phase Det. Diode Load -
R80	470KΩ	½		BTS-470K	Horiz. AFC Filter
R81	1500Ω	½		BTS-1500	Horiz. MV Cathode
R82	4700Ω 20%	½		BTS-4700	Horiz. MV Plate
R83	100KΩ	½		BTS-100K	Horiz. MV Grid - See Note 6
R84	270KΩ	½		BTS-270K	Horiz. MV Plate
R85	22KΩ	1		BTA-22K	Horiz. MV Decoupling
R85	68Ω	½			Parasitic Suppressor
R87	1Meg	½		BTS-1Meg	Horiz. Output Grid
R88	82Ω	1		BW-1-82	Horiz. Output Cathode
R89	8200Ω	2		BTB-8200	Horiz. Output Screen
R90	100Ω 20%	½			Horiz. Feedback
R91	3.3Ω	1			HV Rectifier Filament - Wire Wound
R92	1Meg	1			HV Filter
R93	240Ω	15		2D-250	Filter - Wire Wound - See Note 5
R94	82Ω	2		BW-2-82	Focus Coil Shunt

Note 2 Not used in all models.
Note 3 Some models use 8200Ω resistor in this application.
Note 4 Some models use 100KΩ resistor in this application.
Note 5 Some models use 280Ω resistor in this application.
Note 6 Some models use parallel resistors in this application to obtain desired value.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 1.7A	720VCT .190ADC	5VAC ② 3A	④ 1.2A SEC. 4 6.3VAC ④ 1.2A SEC. 5 6.3VAC ② 5.6A			P-3066 ②	

④ 12.6V Winding used for SEC. 4 and 5.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	165Ω	900Ω		A-8111①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans.
T3	340Ω Tap 51Ω	10.5Ω Taps .5Ω and 7Ω SEC. 2		A-8130	HVO-7		Horiz. Output Trans.
		0Ω					
T4	1.3KΩ	10Ω		A-8112	A-3036	TSO-5 ①	Vert. Output Trans.
T5A	14Ω			DY-9	MDF-70		Horiz. Deflection Coils
B	62Ω						Vert. Deflection Coils.
T6							Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	4.4KΩ	4Ω	370Ω	.5Ω		A-3877	A-2930	RO-9 ①	① Drill one new mounting hole.

PARTS LIST CONTINUED ON PAGE 15

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	STARRETT PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4Ω		ST115 Model P8-V	8A31	
	CONE DIA.	V. C. DIA.				
SP2	7 3/4"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∽)	STARRETT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.190A	69Ω	3.5Henries		C-2325 ①	C-2974	TR4200①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	STARRETT PART No.	IRC PART No.	
L2	Ant. Coil	0Ω	0Ω			
L3	Ant. Coil	0Ω	0Ω			
L4	RF Coil	0Ω				
L5	Mixer Grid Coil	0Ω				
L6	Osc. Coil	0Ω				
L7	Osc. Coil	0Ω				
L8	Fil. Choke	.2Ω			CLA	.47 Microhenries
L9	1st. Video IF	.5Ω				
L10	Fil. Choke	0Ω				
L11	2nd. Video IF	.4Ω				
L12	Fil. Choke	0Ω				
L13	RF Choke	2.6Ω				
L14	3rd. Video IF	.2Ω				
L15	Fil. Choke	0Ω				
L16	RF Choke	2.8Ω				
L17	4th. Video IF	.4Ω				
L18	Peaking	8Ω				120 Microhenries (yellow dot)
L19	Peaking	18Ω				600 Microhenries (red dot)
L20	Peaking	12Ω				240 Microhenries wound on 18KΩ resistor (green dot)
L21	Peaking	15Ω				380 Microhenries (blue dot)
L22	Sound IF	1.7Ω	1.4Ω			
L23	Ratio Det. Trans.	6.8Ω	.2Ω			Tap .5Ω
L24	Horiz. Osc.	55Ω				
L25	Horiz. Size	.7Ω				
L26	Horiz. Lin.	38Ω				

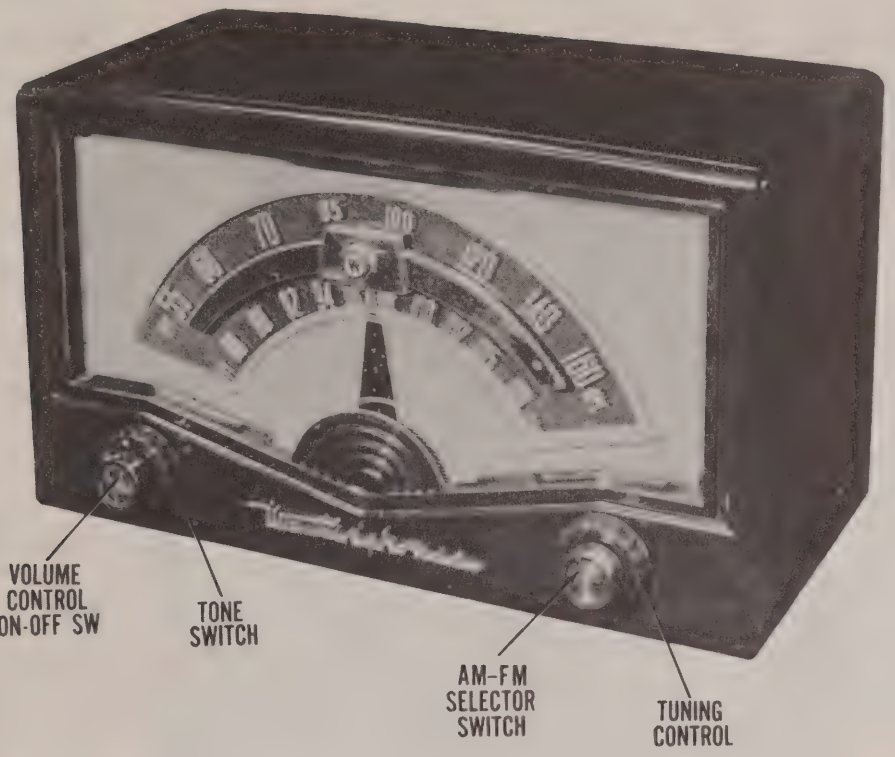
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			STARRETT PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Pigtail	.250A			318.250		

MISCELLANEOUS

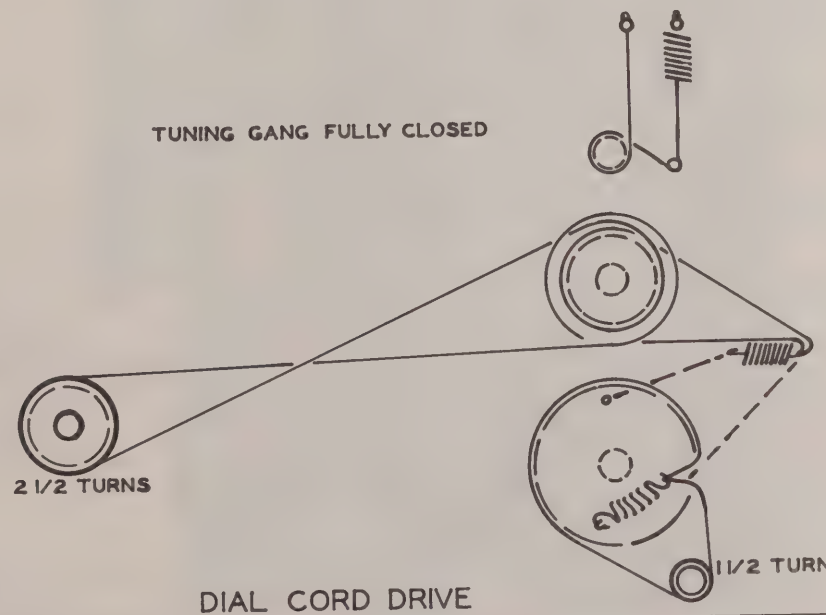
ITEM No.	PART NAME	STARRETT PART No.	NOTES
M2	RF Tuner		
M3	Switch		(TV-Phono)
M4	Focus Magnet		
M5	Ion Trap		
B2	Trimmer		Horiz. Drive 25-290 MMF.

WESTINGHOUSE
MODEL H-334T7UR (Ch. V-2136-5R)



WESTINGHOUSE
MODEL H-334T7UR (Ch. V-2136-5R)

TRADE NAME	Westinghouse, Model H-334T7UR (Ch. V-2136-5R)
MANUFACTURER	Westinghouse Electric Corp., Television-Radio Div., Sunbury, Penn.
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver
TUBES (SEVEN)	Types 12AT7 FM RF-Mixer, 12BE6 FM Osc.-AM Conv., 12BA6 1st IF Amp., 6BJ6 2nd FM IF Amp., 12AL5 Ratio Det., 12AV6 Det.-AVC-AF, 50L6GT Power Output
POWER SUPPLY	105-120 volts AC-DC RATING .36 amp. @117 volts AC
TUNING RANGE	— BROADCAST 540-1615KC



DIAL CORD DRIVE

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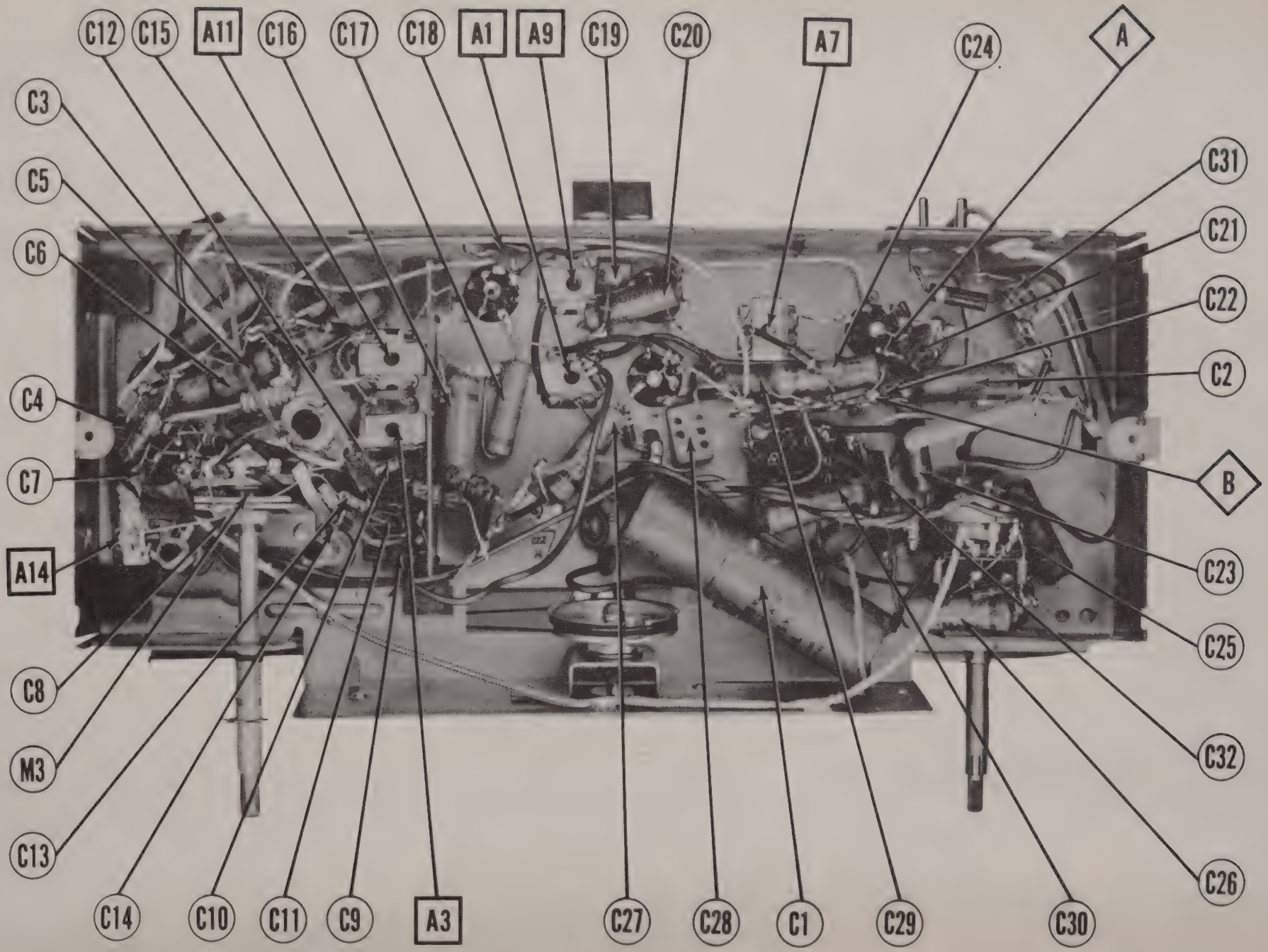
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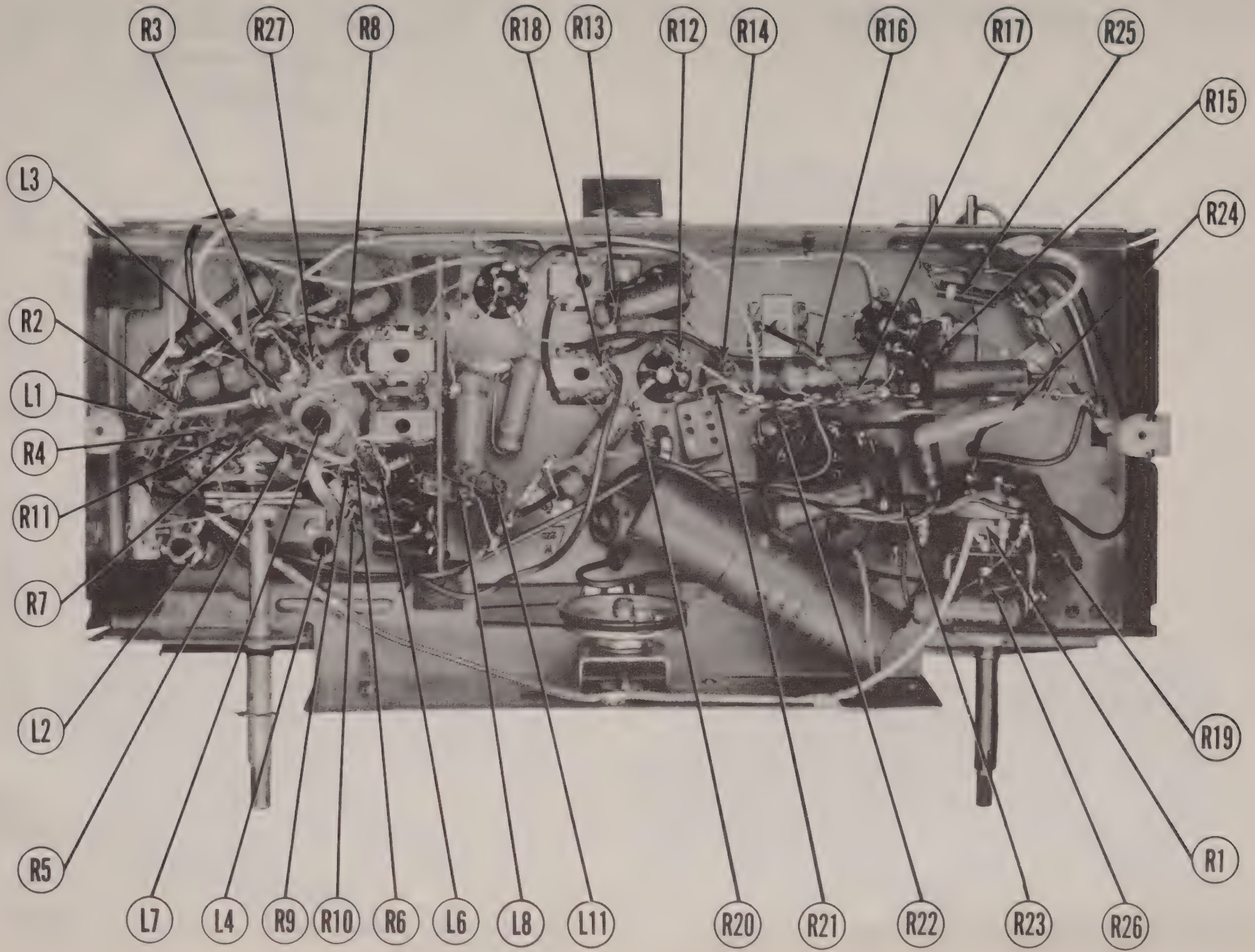
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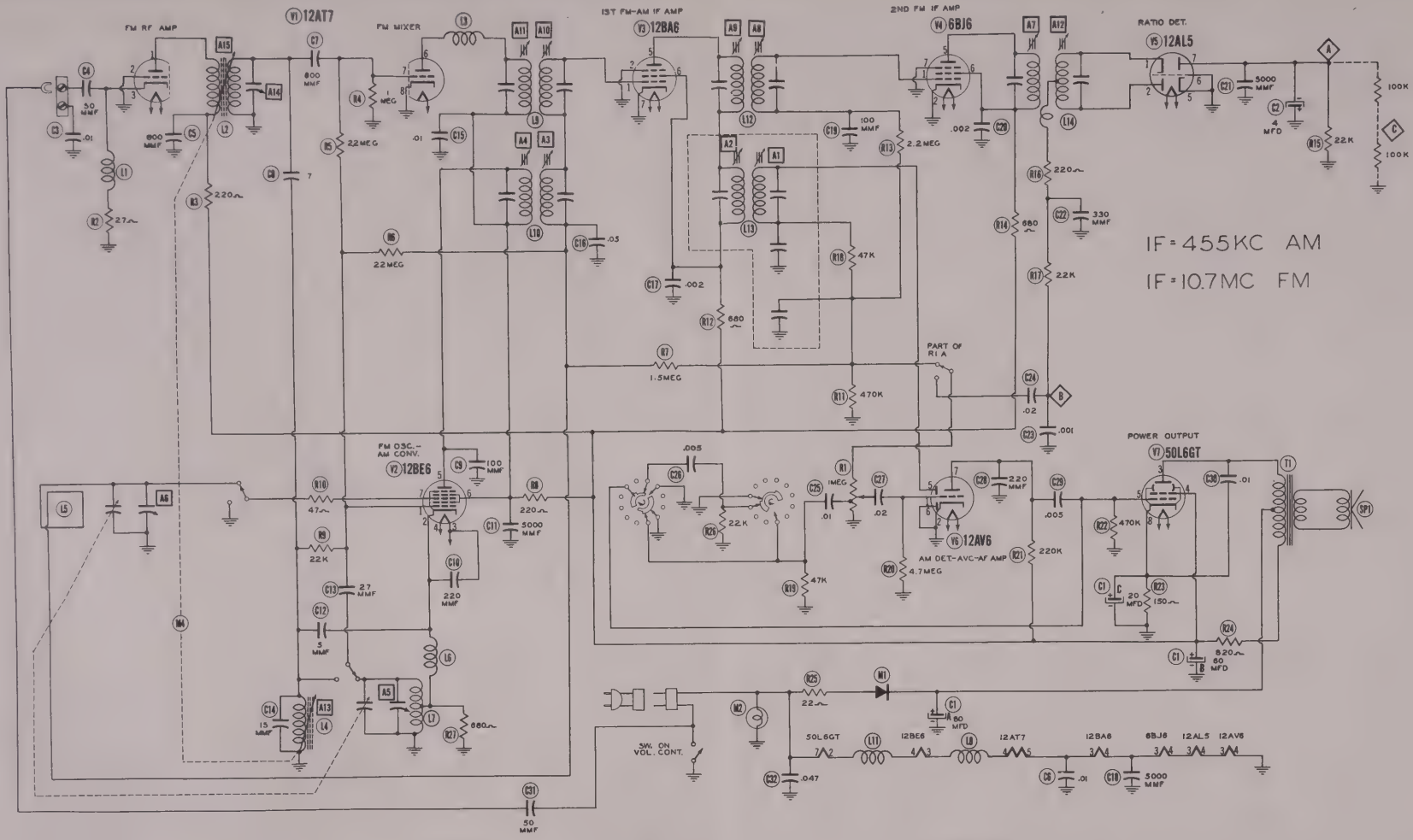

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	85VDC -7.7VDC	0V	.1VDC	54VAC	42VAC	85VDC	-.6VDC	0V	51VAC
V 2	12BE6	98-.7VDC	0V	54VAC	58VAC	85VDC	85VDC	-.4VDC		
V 3	12BA6	-.4VDC	0V	42VAC	30VAC	80VDC	80VDC	0V		
V 4	6BJ6	-.3VDC	0V	30VAC	24VAC	80VDC	80VDC	0V		
V 5	12AL5	-.3VDC †	-.3VDC †	24VAC	12VAC	0V †	0V †	-.8VDC †		
V 6	12AV6	-.5VDC	0V	12VAC	0V	-.5VDC	0V	50VDC		
V 7	50L6GT	0V	85VAC	115VDC	90VDC	0V	90VDC	117VAC.		

† TAKEN WITH VACUUM TUBE VOLTMETER.

† MEASURED IN FM POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	†1KΩ	0Ω	33Ω	48Ω	42Ω	†1KΩ	750KΩ	0Ω	45Ω
V 2	12BE6	22KΩ	1.8Ω	48Ω	55Ω	†1KΩ	†1KΩ	1.6Meg		
V 3	12BA6	1.6Meg	0Ω	42	30	†1.5KΩ	†1.5KΩ	0Ω		
V 4	6BJ6	2.4Meg	0Ω	30	24Ω	†1.5KΩ	†1.5KΩ	0Ω		
V 5	12AL5	Inf.	Inf.	24	12Ω	0Ω	0Ω	22KΩ		
V 6	12AV6	4.7Meg	0Ω	12Ω	0Ω	350KΩ	0Ω	†220KΩ		
V 7	50L6GT	Inf.	55Ω	†240Ω	†820Ω	470KΩ	†820Ω	80Ω	150Ω	

† MEASURED FROM OUTPUT OF M1.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer to the last reference mark at the low frequency end of the dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use in insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on rear section of tuning gang. Low side to chassis.	455KC (400∿Mod.)	AM (CW)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1615KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	"	Tune for maximum output.	"	A6	"

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1, (grid) of 6BA6, (V3). Low side to chassis.	10.7MC (Unmod.)	FM (CW)	Tuning gang fully open.	DC probe to point Ⓐ. Common to chassis.	A7, A8, A9	Adjust for maximum deflection.
5.	"	High side to pin 7, (grid) of 12AT7, (V1). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 1, (grid) of 6BA6, (V3). Low side to chassis.	10.7MC (450KC SWP)	FM (CCW)	Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A7, A8, A9	Disconnect stabilizor capacitor C2. Adjust for maximum amplitude and symmetry as per fig. 1.
5.	"	High side to pin 7, (grid) of 12AT7, (V1). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A12	Reconnect capacitor C2. Adjust A12 so 10.7MC occurs at center of crossover lines as per fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	300Ω carbon resistors	High side thru 300Ω to FM ant. terminal (remove line ant.). Low side to chassis.	98MC (Unmod.)	FM	98MC	DC probe to point Ⓐ. Common to chassis.	A13, A14	Adjust for maximum deflection.
8.	"	"	105MC	"	Tune for maximum deflection.	"	A15	"
9.	"	"	90MC	"	"	"	A14	Rock tuning gang while adjusting for maximum deflection.

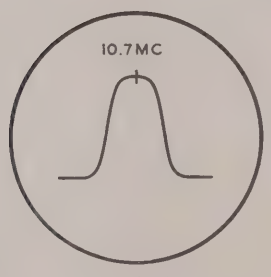


FIG. 1

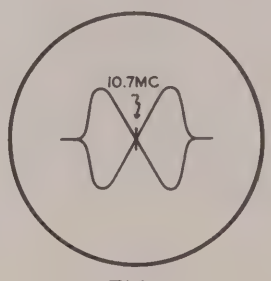


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		WESTINGHOUSE PART No.	STANDARD REPLACEMENT		
V1	FM RF FM Mixer	12AT7	12AT7	9A	
V2	FM Osc. -AM Conv.	12BE6	12BE6	7BT	
V3	1st FM-AM IF Amp.	12BA6	12BA6	7BK	
V4	2nd FM IF Amp.	6BJ6	6BJ6	7CM	
V5	Ratio Detector	12AL5	12AL5	6BT	
V6	AM Det. -AVC-AF	12AV6	12AV6	7BT	
V7	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

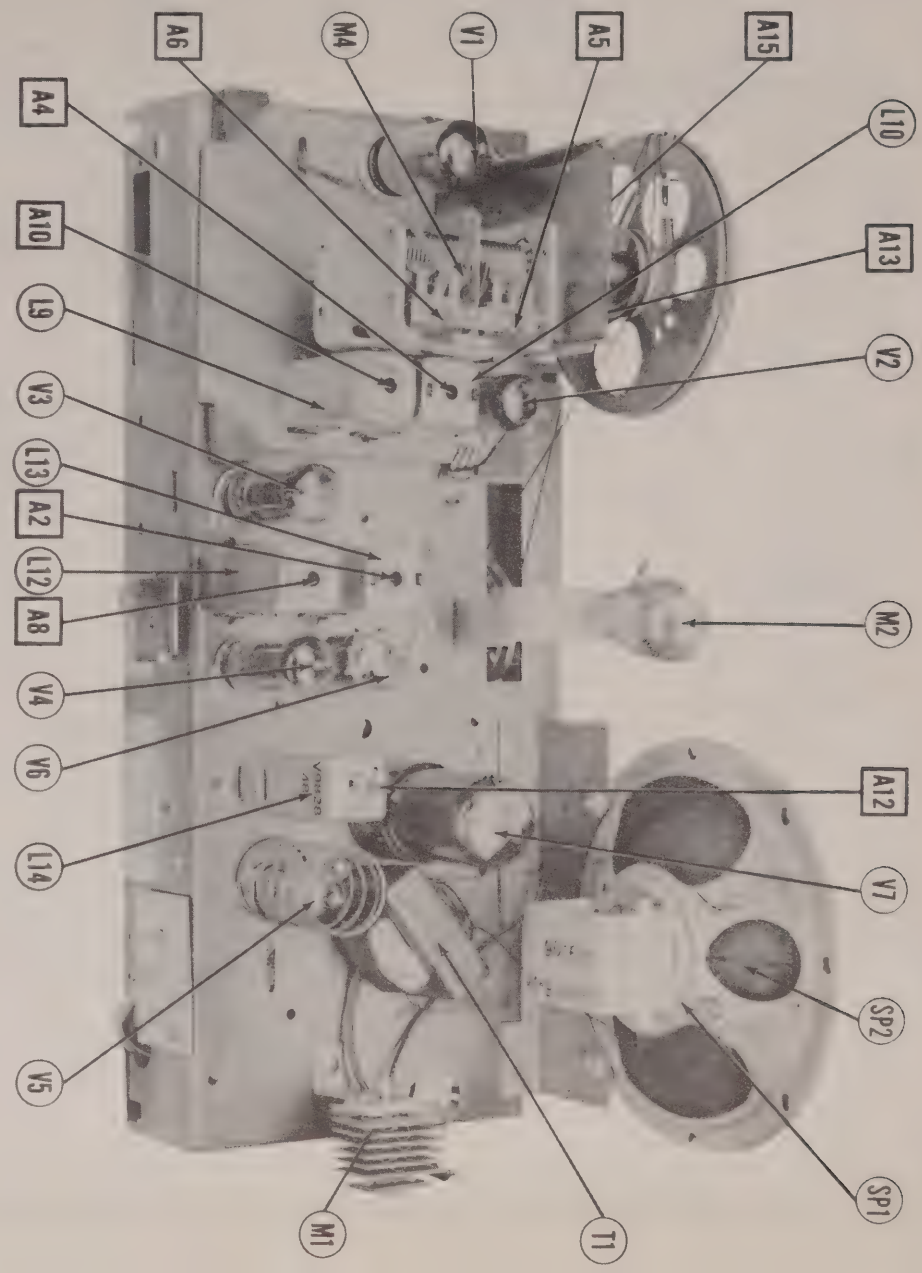
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	V-10415-1	PRS150/80-40-20		EDL4415C		TVA-3455	Filter
B	60	150				BR6015		TVA-1205	Filter
C	20	25		PRS25/25					Audio Output Cathode
C2	4	50	V-4637	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C3	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	FM Ant. Isolation
C4	50		V-5658-10	SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	FM RF Coupling
C5	800		V-9863-1	BPD-0008	DD-801	1W5T8			FM RF Amp. Decoupling
C6	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	FM RF Amp. Filter
C7	800		V-9863-1	BPD-0008	DD-801	1W5T8			FM RF Coupling
C8	.68		V-5658-4		TCZ-.68		NPOK-R68		FM RF Coupling
C9	100	500	RCM20D101J	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	AM Conv. -FM Osc. Plate
C10	220		R5CC20ZY221M	SI220	D6-221				AM Conv. -FM Osc. Cathode
C11	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Osc. Anode
C12	5		R2CC300K050D	SI5N750			N750K-050		FM Osc. Feedback
C13	27		R2CC30UK270K		TCN-27		N750K-270		Osc. Grid Cap.
C14	15				TCZ-15		NPOK-150	5TCC-Q15	Fixed Trimmer
C15	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	FM Mixer Plate Dec.
C16	.05	200	RCP10W2503M	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C17	.002	600	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	1st IF Amp. Dec.
C18	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st IF Amp. Filter
C19	100	500	RCM20A101M	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	AVC Filter
C20	.002	600	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	2nd FM IF Amp. Dec.
C21	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C22	330	500	RCM20A331M	1468-00035	D6-331		GP2K-331	1FM-335	RF Bypass
C23	.001	600	RCP10W6102M	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	De-Emphasis
C24	.02	200	RCP10W2203M	P488-02	DF-203	PTE4S2		2TM-S2	Audio Coupling
C25	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C26	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C27	.02	200	RCP10W2203M	P488-02	DF-203	PTE4S2		2TM-S2	Audio Coupling
C28	220	500	RCM20A221M	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	AF Amp. Plate
C29	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C30	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Output Plate
C31	50		V-5658-10	SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	FM Ant. Line Isolation
C32	.047	400	V-10157-4473M	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	Tone switch		V-9824-1				Part of Volume control
B	1Meg	½					Volume control and SW-tapped @ 200KΩ

CHASSIS—TOP VIEW



SET 14-9
FOLDER 14

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	Westinghouse PART No.	IRC PART No.	
R2	27Ω	½			FM RF Amp. Cathode-See Note 1
R3	220Ω	½	RC20AE221M	BTS-220	FM RF Amp. Decoupling
R4	1Meg	½	RC20AE105M	BTS-1Meg	FM Mixer Grid
R5	2.2Meg	½	RC20AE225M	BTS-2.2Meg	AVC Network
R6	22Meg	½	RC20AE225M	BTS-22Meg	AVC Network
R7	1.5Meg	½	RC20AE155M	BTS-1.5Meg	AVC Network
R8	220Ω	½	RC20AE221M	BTS-220	Decoupling
R9	22KΩ	½	RC20AE223K	BTS-22K	FM Osc. Grid
R10	47Ω	½	RC20AE470M		Parasitic Suppressor
R11	470KΩ	½	RC20AE474M	BTS-470K	Diode Load
R12	680Ω	½	RC20AE681M	BTS-680	1st IF Amp. Decoupling
R13	2.2Meg	½	RC20AE225M	BTS-2.2Meg	AVC Network
R14	680Ω	½	RC20AE681M	BTS-680	2nd FM IF Amp. Decoupling
R15	22KΩ	½	RC20AE223K	BTS-22K	Ratio Det. Diode Load
R16	220Ω	½	RC20AE221M	BTS-220	Balancing
R17	22KΩ	½	RC20AE223K	BTS-22K	De-Emphasis
R18	47KΩ	½	RC20AE473M	BTS-47K	Diode Filter
R19	47KΩ	½	RC20AE473M	BTS-47K	Tone Compensation
R20	4.7Meg	½	RC20AE475M	BTS-4.7Meg	AF Amp. Grid
R21	220KΩ	½	RC20AE224M	BTS-220K	AF Amp. Plate
R22	470KΩ	½	RC20AE474M	BTS-470K	Output Grid
R23	150Ω	1	RC30AE151K	BTA-150	Output Cathode
R24	820Ω	5	V-6984-10	1 3/4A-800	Filter-Wire Wound
R25	22Ω	1	RC30AE220K		Rectifier Ballast
R26	22KΩ	½	RC20AE223M	BTS-22K	Tone Compensation
R27	680Ω	½		BTS-680	AM Osc. Coil Shunt-See Note 2

Note 1 Some models use 33Ω resistor in this application.
Note 2 Not used in all models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3.9KΩ	2.9Ω	240Ω Tap 8.5Ω	.7Ω	V-10660	A-3330	A-3031	RO-3	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.		ST105		
SP1	PM	2.9Ω	V-9641-2	Mod. P5-X	52A1	
	CONE DIA.	V.C. DIA.				
SP2	4 9/16"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	Westinghouse PART No.	IRC PART NO.	
L1	FM Ant. Choke	.8Ω		V-9099-1	CLA	1.2 Microhenries
L2	FM-RF Coil	0Ω	0Ω	V-9674		
L3	Para. Supp.	0Ω		V-4886-12		
L4	FM Osc. Coil	0Ω		V-9675		

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	Westinghouse PART No.		
L5	AM Loop Ant.	2.2Ω		V-9653		
L6	RF Choke	.8Ω		V-9099-1	CLA	1.2 Microhenries
L7	AM Osc. Coil	8Ω		V-9672		Tap 1.2Ω
L8	Fil. Choke	.8Ω		V-9099-1	CLA	1.2 Microhenries
L9	1st FM IF	.9Ω	.9Ω	V-9688		
L10	1st AM IF	16Ω	16Ω	V-9649-1		
L11	Fil. Choke	.8Ω		V-9099-1	CLA	1.2 Microhenries
L12	2nd FM IF	1.6Ω	1.6Ω	V-9642		
L13	2nd AM IF	16Ω	16Ω	V-10350-1		
L14	Ratio Det. Trans.	2.8Ω	.4Ω	V-9828		Tap .5Ω

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	WESTINGHOUSE PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.075A	V-9640	NC-5	5M1	

DIAL LIGHTS

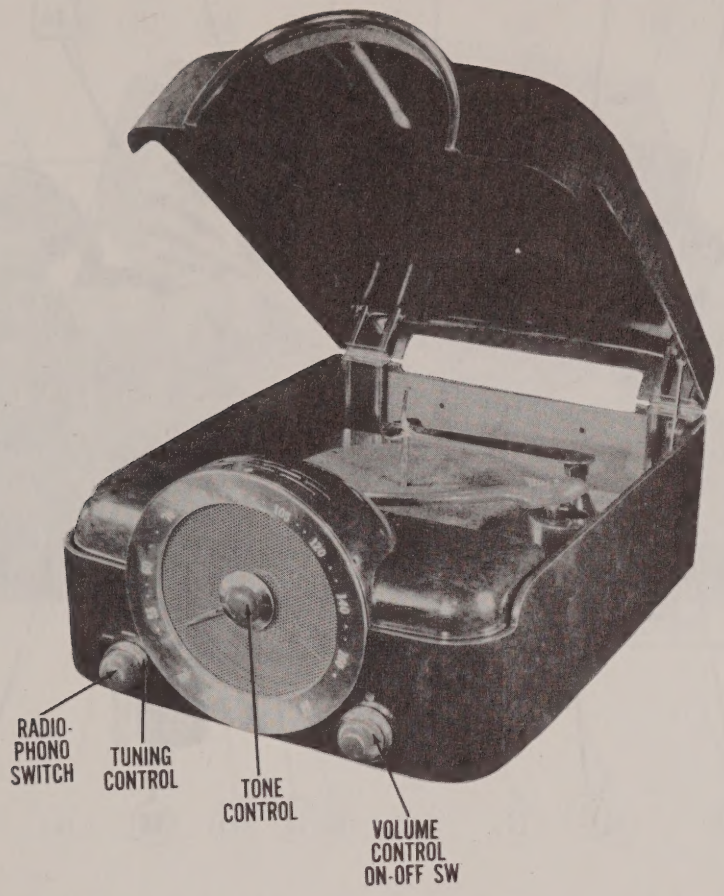
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					WESTINGHOUSE PART No.		
M2	Bayonet	120V		Clear	6S6DC		6watt

MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
M3	Switch	V-9681-1	AM-FM
M4	2 gang var. cap.	V-9671-2	(44-524MMF, 40-216MMF)
A14	Trimmer	V-9670	FM RF Adj.
	Dial Pointer	V-10310-1	
	Cabinet	V-1233-1	
	Dial	V-10308-1	

ZENITH
MODEL H664 (Ch. 6H02)

ZENITH
MODEL H664 (Ch. 6H02)



ZENITH
MODEL H664 (Ch. 6H02)

TRADE NAME	Zenith, Model H664 (Ch. 6H02)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Illinois
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types 12BE6 Converter, 6BJ6 IF Amp., 12AT6 or 6AQ6 Det.-AVC-AF, 12J5 Phono Pre-Amp., 50L5 Power Output, 35W4 or 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC — SHORT WAVE

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4 ∅	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for maximum output.	"	A6	"

In the event the receiver oscillates during phono operation, adjust B1 until the oscillation ceases. The point of non-oscillation may vary with different cartridges, therefore B1 may require adjustment if the phono cartridge is changed.

FOR SERVICE INFORMATION ON RECORD CHANGER SEE ZENITH MODEL S-14028 IN PHOTOFACT SET 145 FOLDER 13.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL H664

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	6BJ6	6BJ6	7CM	
V3A	Det.-AVC-AF	12AT6	12AT6	7BT	
B	Det.-AVC-AF	6AQ6	6AQ6	7BT	
V4	Phono pre-amp.	12J5	12J5	6Q	
V5	Power Output	50C5	50C5	7CV	
V6A	Rectifier	35W4	35W4	5BQ	
B	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	22-2272	AFH 3-13		UP84215		R1040	■ Filter
B	40	150							▲ Filter
C	20	150							Decoupling
C2	.05	200	22-829	P288-05	DF-503	PTE4S5		2TM-S5	AFC Filter
C3	100		22-5	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Osc. Grid Cap.
C4	.0005	600	22-854	SI500	D6-501	5W5T5	GP2K-501	5TM-T5	AVC Filter
C5	100		22-2311	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Audio Coupling
C6	.05	200	22-829	P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C7	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Audio Coupling
C8	4000		22-4	BPD-004	D6-402	1D5D4	GP2-333-402		Audio Coupling
C9	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Audio Coupling
C10	4000		22-4	BPD-004	D6-402	1D5D4	GP2-333-402		Tone Comp.
C11	.05	200	22-178	P288-05	DF-503	PTE4S5		2TM-S5	Tone Comp.
C12A	.005								Audio Coupling
B	250		♦105-27		♦PC-70				AF Amp. Plate
C									Output Grid
C13	.01	400	22-1182	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Output Plate
C14	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Line Filter
C15	.05	200	22-829	P288-05	DF-503	PTE4S5		2TM-S5	Line Isolation

♦ Items C12A, C12B, C12C, R10A, R10B are combined into one unit in some models.
When replacing items separately, C12B and C12C should total 250MMF.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	63-2270	Q11-133	AG-58-S	AN-59	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R1A Per Instructions
C	Switch		Not Req.	76-1	SWB	K-155	Attach to R1A Per Instructions
R2A	500KΩ	½	63-2269		AG-58-S ∅	AN-59 ∅	Tone Control
B	Shaft		Not Req.		KSS-3	AK-4	Attach to R2A Per Instructions

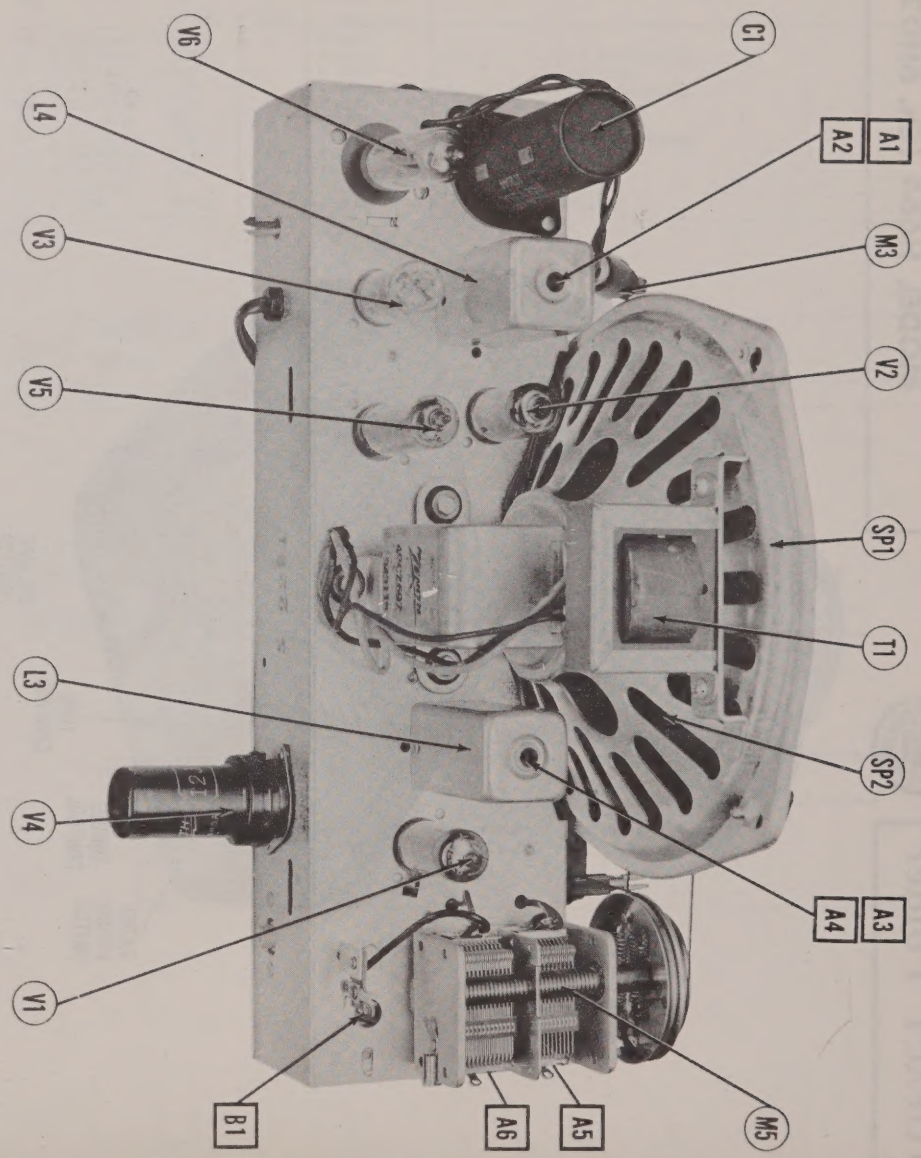
∅ Fashion shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R3	10KΩ	½	63-1828	BTS-10K	Osc. Grid
R4	15Meg	½	63-1961	BTS-15Meg	AVC Network
R5	2.2Meg	½	63-1926	BTS-2.2Meg	AVC Network
R6	2.2Meg	½	63-1926	BTS-2.2Meg	AVC Network
R7	10KΩ	½	63-1828	BTS-10K	Decoupling
R8	47KΩ	½	63-1856	BTS-47K	Phono Amp. Decoupling
R9	4.7Meg	½	63-1940	BTS-4.7Meg	AF Amp. Grid
R10A	470KΩ	½	105-27 ♦	BTS-470K	AF Amp. Plate
B	470KΩ	½		BTS-470K	Output Grid
R11	47KΩ	½	63-1856	BTS-47K	Tone Compensation
R12	2.2Meg	½	63-1926	BTS-2.2Meg	Phono Pre-Amp. Grid
R13	22KΩ	½	63-1842	BTS-22K	Phono Pre-Amp. Plate
R14	150Ω	1	63-1977	BTA-150	Output Cathode
R15	2200Ω	½	63-1800	BTS-2200	Feedback Network
R16	820Ω	½	63-1782	BTS-8200	Feedback Network
R17	1000Ω	1	63-1574	BTA-1000	Filter
R18	22Ω	½	63-1219	BW-½-22	Surge Limiter-Wire Wound

♦ Items R10A, R10B, C12A, C12B, and C12C are combined into one unit in some models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.3KΩ	3.2Ω	220Ω Tap 6Ω	.6Ω	206C2697		A-3031 ①	RO-3 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD RES.	V.C. IMP.	49-697	ST116 Mod. P8-6U	8A21	
	PM	3.2Ω				
	CONE DIA.	V.C. DIA.				
SP2	7 3/8"	9/16"	ZC7512B			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.		
L1	Loop Ant.	3Ω		S-17651		
L2	Osc. Coil	.8Ω	6.2Ω	S-13799		
L3	1st IF	20Ω	20Ω	95-1101		
L4	2nd IF	20.5Ω	20.5Ω	95-1102		
L5	Phono Osc. Coil	2Ω		S-12603		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	ZENITH PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	S-15780							

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	ZENITH PART No.	WALCO PART No.	
M2			

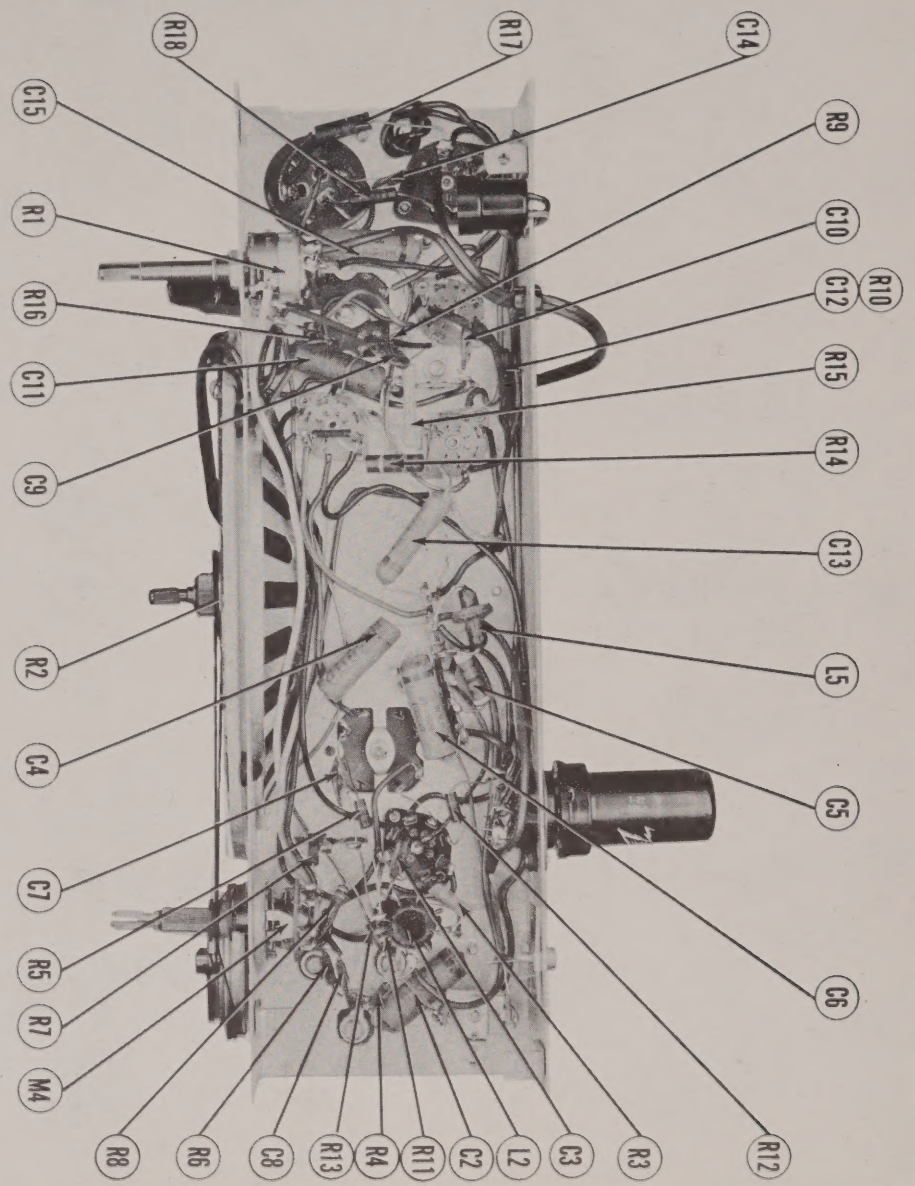
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ZENITH PART No.		
M3	Bayonet	6-8	.15	Brown	100-67		Type number 47.

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M4	Switch	85-499	Radio-Phono
M5	2 Gang Var. Cap.	22-2273	(18-447MMF, 31-197MMF)
	Dial Scale	26-456	
	Dial Pointer	59-255	

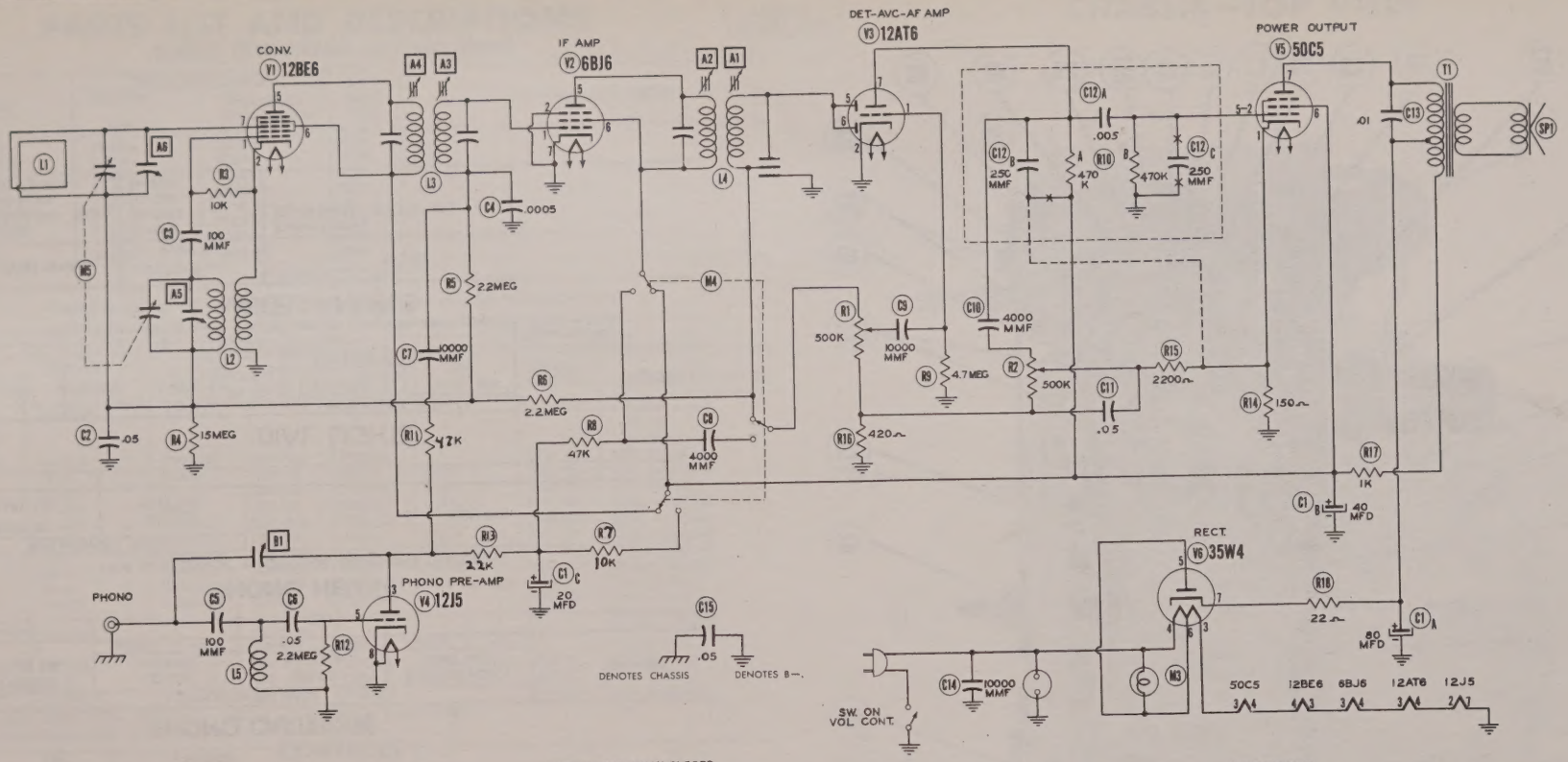
CHASSIS—BOTTOM VIEW

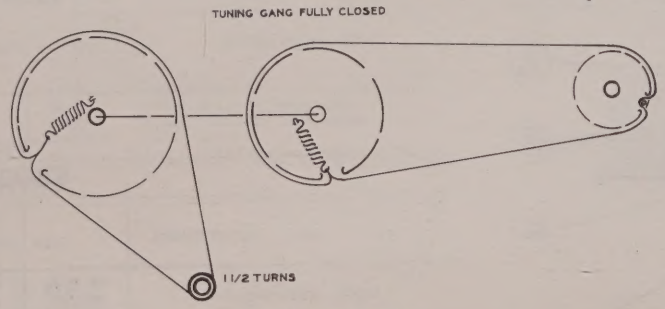


SET 149 FOLDER 15

ZENITH MODEL H664

ZENITH MODEL H664





DIAL CORD DRIVE

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	§-5.6VDC	0V	30VAC	42VAC	90VDC	90VDC	-.1VDC	
V 2	6BJ6	-.2VDC	0V	30VAC	24VAC	90VDC	90VDC	0V	
V 3	12AT6	-.5VDC	0V	24VAC	12VAC	-.5VDC	-.5VDC	33VDC	
V 4	12J5	▲0V	12VAC	¶50VDC	▲0V	¶§-2.7VDC	▲0V	0V	¶0V
V 5	50C5	6.1VDC	0V	90VAC	42VAC	0V	90VDC	105VDC	
V 6	35W4	117VAC	115VDC	90VAC	117VAC	110VAC	110VAC	115VDC	

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	10KΩ	.8Ω	30Ω	42Ω	†1KΩ	†1KΩ	1.9Meg	
V 2	6BJ6	4.9Meg	0Ω	30Ω	24Ω	†1KΩ	†1KΩ	0Ω	
V 3	12AT6	4.7Meg	0Ω	24Ω	12Ω	500KΩ	500KΩ	†500KΩ	
V 4	12J5	▲0Ω	12Ω	¶†33KΩ	▲0Ω	2.2Meg	▲0Ω	0Ω	0Ω
V 5	50C5	150Ω	470KΩ	92Ω	42Ω	470KΩ	†1KΩ	†220Ω	
V 6	35W4	125Ω	†28Ω	92Ω	125Ω	110Ω	110Ω	80KΩ	

ALL MEASUREMENTS TAKEN IN RADIO (BC) POSITION UNLESS NOTED.
¶ MEASURED IN PHONO POSITION.
† MEASURED FROM PIN 7 OF V6.
▲ MEASURED FROM CHASSIS.

149-15

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.